SITE INVESTIGATION

Former Stop and Wash

904-906 South Avenue
Plainfeild, Union County, New Jersey
EPA ID #: NJN000206278

Volume I of I

New Jersey Department of Environmental Protection
Site Remediation Program
Bureau of Environmental Measurements and Site Assessment

September 2008

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Former Stop and Wash
A.k.a. Ruthen Laundromat Inc.
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NARRATIVE

SITE INVESTIGATION REPORT

PART I: GENERAL INFORMATION

Site Name: Former Stop and Wash
AKA: Ruthen Laundromat Incorporated
Address: 904-906 South Avenue
Municipality: Plainfield **State:** NJ **Zip Code:** 07003
County: Union
Latitude: + 40.626453 **Longitude:** - 74.405526
USGS Quadrangle: Chatham, N.J. (Map 1)
EPA ID No.: NJN000206278
Block: 621 (prior Block designation 237) **Lot:** 2
Acreage: 0.18-acres **SIC Code:** 7215

Current Property Owner(s) /Business Operator(s): Garland and Marsha Webb
Mailing Address: 474 Shearer Avenue
City: Union **State:** NJ **Zip Code:** 07083
Telephone No.: 908-353-2289

The subject property addressed in this Site Investigation (SI) was a coin-operated laundromat known as the former Stop and Wash facility located at 904-906 South Avenue in Plainfield, New Jersey. (Map 6) At the time of this report, the subject property is an undeveloped 0.18 acre overgrown lot with no permanent structures.

Owner/Operator History:

The subject property is listed on the City of Plainfield Tax Records as located on Block 621 (prior Block designation 237), Lot 2. (Map 2) The below table itemizes the owner/operator history of the property.

NAME	OPERATOR/ OWNER	DATES	
		FROM	TO
Niels R. and Lydia Nevad	Owner/Operator	Unknown	1956
Norman R. and Margaret D. Nevad	Owner/Operator	1956	1959
Helmor Realty, Incorporated	Owner/Operator	1959	1974
1st National Bank	Owner/Operator	1974	1979
Alfred and Inge Leitow	Owner/Operator	1979	1982
Mr. Alfred Leitow	Owner/Operator	1982	1983
E.R.& K Realty Corporation	Owner	1983	1984
Claude and Maryse Louissaint	Owner/Operator	1984	1984

NAME	OPERATOR/ OWNER	DATES	
		FROM	TO
Claude and Maryse Louissaint	Owner/Operator	1984	1984
Maryse Louissaint (sole heir from husband)	Owner/Operator	1984	2006
Garland and Marsha Webb	Owner	2006	Present

Surrounding Land Use (zoning, adjacent properties): Surrounding land use is mixed residential, commercial and industrial. The former Stop and Wash property is bordered by a shopping center to the northeast, residential properties to the east and south and southwest, and an automotive supply store to the west. A convenience store and a children's daycare facility, called Al & Jeans Children's Daycare facility (Al and Jeans), lease space within the shopping center, located at 912 South Avenue.
Distance / Direction to Nearest Residence or School: A single-story residence borders the southwestern property boundary. Al and Jeans Daycare facility borders the northeastern property boundary.
Population Density (residents per square mile): 7,922 residents per square mile (2000 Census)

PART II: SITE OPERATIONS

Discuss all current and past operations at the site. Include a description of the buildings or structures on site and their physical condition. In addition, tabulate all areas of concern (AOC) and provide the waste source type for each AOC. Include the physical state of waste at each AOC as stored or disposed, the condition of containers and the presence or absence of secondary containment and the volume of waste stored or disposed, or the volume or area of contaminated soil or water.

According to the 1951 and 1956 Sanborn Fire Insurance (Sanborn) Maps, a two-story domestic dwelling and a single story garage occupied the subject property. The domestic structure and the garage were constructed of hollow concrete blocks. The 1963 and 1982 Sanborn Maps identified the first level of the main building on the subject property as a "store" and the second level as a "domestic dwelling". (Map 7 and Attachment A) Both the 1963 and 1982 Sanborn Maps identified a vent on the southeastern side of the main building. No coverage was available prior to 1951 for this area. Surrounding properties consisted of domestic dwellings to the south, northeast and east, an auto service station to the north, the J.D. Louizeaux Lumber Company to the west, and an auto service station to the southwest.

According to the City of Plainfield industrial directories, the former Stop and Wash facility started operations at 904-906 South Avenue in Plainfield, New Jersey sometime between 1956 and 1962. The 1962 Union County Business Directory identified that Henry and Ruth Kanar (a.k.a. Ruthen Laundromat Inc.) operated an automatic laundromat and dry-cleaning business at 906 South Avenue, Plainfield, New Jersey. (Attachment B) The NJDEP has no records for the Ruthen Laundromat Inc. in Plainfield, New Jersey. In 1984, Claude and Marisse Louissaint purchased the subject property from E.R.K Realty Company. The Louisssaint's took over the coin-operated laundromat, called Stop and Wash. According to the daughter of the Louissaint's, Ms. Marsha Webb, the family had operated the laundromat until approximately 1993, when they closed the business. Ms. Webb stated that her family had left the building vacant for numerous years and finally sold the property in 2006. Ms. Webb had helped run the laundromat and stated that one self-serve dry cleaning machine did operate within the facility. Ms. Webb was unaware of any hazardous chemicals that might have been used by the facility, specifically the dry cleaning machine. In May 2006, Mr. Garland and Marsha Webb purchased the property from the Louissaint's. Mr. Webb confirmed that the facility was not operating when he purchased it from his wife's family. The current owners, Mr. Garland and Marsha Webb, stated that they have no information or records regarding chemicals used on site. Mr. Webb did not perform any testing or environmental investigations prior to purchasing the former Stop and Wash property and knows of no previous environmental investigations for the property. In 2007, Mr. Webb contracted A & L Home Improvement (A & L) of Plainfield, New Jersey to demolish the building. Upon review of the City of Plainfield Building Permit records, prior to demolition Mr. Rufus Thomas, the owner of A&L, had contracted Loeffel's Waste Oil Service to remove three tanks from the 904-906 South Avenue property on May 15, 2007. The waste manifest provided to Mr. Thomas by Loeffel did not disclose the contents or amount of liquid that was removed from the tanks. (Attachment C) According to the City of Plainfield Building Permit files, the Stop and Wash building was demolished in June 2007 by A & L. Mr. Webb had stated that fill material was brought to the site by A &L after building demolition. Union County officials required testing of this backfill material. City records included a copy of the laboratory analytical results of the backfill material placed on the property. The laboratory analytical results did not report any constituents above NJDEP Soil Remediation Standards (SRS). (Attachment D)

The NJDEP does not have any records regarding chemicals used for the Stop and Wash facility. It is unknown if former operations previously utilized and disposed of tetrachloroethylene (PCE) -based solvents at the facility. A review of the City of Plainfield Health Department (PHD) records identified that the 904-906 South Avenue property, associated with the former Stop and Wash, was infested with rats. The PHD inspection report was filed in 1988 and noted that the facility at 906 South Avenue was closed, rats were in the building, and piles of garbage/debris had been stockpiled in the back of the facility. There were no other PHD inspection reports for the subject property.

In February 2008, NJDEP, Bureau of Environmental Measures and Site Assessment (BEMSA) personnel performed an initial site inspection of the subject property and surrounding properties. The subject property was an overgrown, dirt rectangular lot. An asphalt parking lot covers about 1/3 of the front entrance to the subject property. The asphalt lot was the parking for the former Stop and Wash facility and is accessed directly by South Avenue. The land surface was fairly level with metal-mesh fencing bordering the eastern and southeastern boundary, providing a separation from the adjacent residential property.

BEMSA personnel noted limited debris scattered throughout the subject property that can be characterized as general litter from the surrounding convenience store and residential properties. No evidence of aboveground storage tanks (ASTs), underground storage tanks (USTs), drums, hazardous chemicals or surface discolorations were observed on or adjacent to the subject property. The public utilities for the area include gas, electric and water. The gas, water and sewer lines were formerly connected to the building from South Street, which ran into the front or side of the building. Since the building was demolished and the land resurfaced, the exact location of the utilities that serviced the building or how the drain system was designed is unknown.

AOC SUMMARY TABLE

AOC Name	Source Type	CERCLA Exempt	Physical State	Waste Quantity
Dry Cleaning Machine	Other	No	Liquid/Solid	Unknown
Dumpster Area/Rear of Building	Drums/Other	No	Liquid/Solid	Unknown
Drain System to PSWA	Other	No	Liquid	Unknown

PART III: PERMITS

A. NJPDES

There are no NJDEP records of a NJPDES permits being issued to Stop and Wash or Ruthen Laundromat Inc.

B. New Jersey Air Pollution Control Certificates

There are no records of NJDEP air permits issued to Stop and Wash or Ruthen Laundromat Inc.

C. BUST Registration

Registration No.: Not Applicable
No. of Tanks: None Identified

No registration information was found within the NJDEP, Bureau of Underground storage Tanks (BUST) database. The 1963 and 1982 Sanborn Maps for the domestic dwelling on the subject property identified a vent on the southern side of the building. This may have corresponded to a residential heating oil tank; however, residential heating oil tanks below a 2,000-gallon capacity are not registered within the State of New Jersey. A waste manifest receipt was submitted to the City of Plainfield Building Permit section for the subject property. This receipt stated that the owner of the demolition company, Mr. Thomas, had hired Loeffels Waste Oil company to remove three tanks from 904-906 South Avenue. The receipt did not specify type or amount of liquid removed from the tanks or the size of the tanks. The current property owners stated that a heating oil tank or any petroleum storage tank were not utilized by the facility.

D. RCRA Status (TSD, Generator, Protective Filer, etc.)

The subject property was not listed under RCRA.

E. Other Permits (RCRA, NRC, etc.)

None issued.

PART IV: SOIL EXPOSURE

Describe soil type. Include soil series, composition of the soil and permeability of the soil.

The United States Department of Agriculture, Soil Conservation Service, Soil Survey of Union County, New Jersey states that the site is located on Urban Land. This soil association occurs in urban areas, which are described as surfaces covered by pavement, concrete, buildings and other structures underlain by disturbed and natural soil material. The permeability is unknown for this soil association, permeability is related to the soil series, which is not documented for this site. (Attachment E)

For each sampling event, state the sampler and date of sampling and list the name, address and certification number of the lab which performed the analyses. State who conducted the quality assurance review of the data and summarize any data qualifications. Tabulate sample numbers and the associated Area of Concern or describe sample location. Identify samples which establish background conditions.

Between June 23 and 26, 2008, NJDEP, BEMSA collected five soil samples throughout the site utilizing a hydraulically powered soil probing unit called a Geoprobe®. (Map 3) The samples were collected in the following locations:

Sample No.	Sample Depth*	Location (Map 3)
SB-8	2.5 to 3.0	Location of former Stop and Wash building pad, front portion of former building along centerline of former building
SB-9	1.5 to 2.0	Location of former Stop and Wash building pad, rear portion of former building that is approximately 20 feet north of location SB-8
SB-10A	2.5 to 3.0	Rear portion of Stop and Wash Property, location of potential dumpsters and any trash/storage area outside of former building pad.
SB-10	27.5 to 28.0	Rear portion of Stop and Wash Property, location of potential dumpsters and any trash/storage area outside of former building pad.
SB-15	2.5 to 3.0	Duplicate sample of SB-8

* Sample Depth is reported as feet below ground surface.

The samples were analyzed for volatile organic compounds (VOCs) by Datachem Laboratories, Inc. of Salt Lake City, Utah. Data validation was performed by the USEPA. The laboratory data package with the validation information is included as Attachment F.

Tabulate contaminants identified in the soil. Include sample number, depth, contaminant levels and corresponding NJDEP Soil Remediation Standard. Discuss contaminants identified in the soil above background and remediation standards and provide the rationale for site attribution. State whether Level 1 or Level 2 contamination is present.

Analytical results of soil samples are depicted in the table below.

NJDEP, BEMSA June 23rd to 26th, 2008 Soil Sampling Event Former Stop and Wash Property, Plainfield, New Jersey						
Chemical Name	Location					NJDEP Direct Contact Residential SRS / Nonresidential SRS
	SB-8*	SB-9	SB-10A	SB-10	SB-15*	
Cis-1,2-DCE	0.0072	ND	ND	ND	0.0059	230 / 560
Methylene Chloride	0.0047 JB	0.0047 JB	0.0066 JB	0.0051 JB	0.0045 JB	34 / 97
PCE	0.022	0.0059	ND	0.001 J	0.027	2 / 5
TCE	0.001 J	ND	ND	0.0001 J	0.001 J	7 / 20
Toluene	0.0047 JB	0.0047 JB	0.0066 JB	0.0051 JB	0.0045 JB	6,300 / 91,000

NOTES: DCE = Dichloroethene, PCE = Tetrachloroethylene, TCE = Trichloroethylene
* Duplicate soil sample collected from SB-8, Concentrations are in parts per million (ppm)
Bold and highlighted boxes indicate exceedances of NJDEP Direct Contact Soil Remediation Standards (SRS).
J = estimated concentration, JB = estimated concentration that was also detected in the field blank.
ND = Not detected above the laboratory method detection limit (MDL)

A release of PCE is suspected to have occurred in the 1.5- to 3.0-foot interval in subsurface soils under the former Stop and Wash building footprint. Soil sample locations SB-8 and SB-9 correspond to the centerline of the building footprint where drains that discharged to the sanitary sewer may have been oriented under the facility. Laboratory analytical results reported concentrations of PCE in SB-8 and SB-9; however, the reported concentrations are not above the NJDEP Soil Remediation Standards (SRS). Laboratory analytical results of soil sample location SB-10A did not report PCE concentrations above the laboratory method detection limits (MDLS) in the 2.5- to 3.0-foot interval and represents a background concentration. Based on these results, a release to soil of PCE attributable to the site has been documented above background but below NJDEP SRS.

Total area of surficial contamination in square feet:

No surficial samples were collected.

If no soil sampling has been conducted, discuss areas of potentially contaminated soil, areas that are visibly contaminated or results from soil gas surveys.

In 2008, NJDEP personnel collected two rounds of indoor air and subslab vapor samples on the 912 South Avenue property. The air sampling event was performed to assess air quality of the Al and Jean's Daycare that occupied the shopping center located adjacent to the former Stop and Wash facility on the 912 South Avenue property. (Map 5) The contaminants PCE and TCE were detected at concentrations above the indoor air and soil gas screening levels. The NJDEP determined that the shopping centers ambient air quality did not meet NJDEP indoor air quality standards. NJDEP suspected that the PCE and TCE concentrations detected in the indoor air and subslab samples in the daycare facility might be attributable to an off-site shallow ground water

PCE plume. In May 2008, NJDEP installed a vapor recovery and treatment system within the shopping center to treat hazardous fumes entering the facility from an off-site ground water contaminant plume.

Number of people occupying residences or attending school or day care on or within 200 feet of the site: 100
Number of workers on or within 200 feet of the site: 10
Number of on-site employees: 0

Identify terrestrial sensitive environments within 200 feet of observed contamination.

There are no terrestrial sensitive environments within 200 feet of the site.

Determine if any commercial agriculture, silviculture, livestock production or grazing are present within 200 feet of observed contamination.

There is currently no agricultural, silviculture, livestock production or grazing conducted within 200 feet of this site.

A. HYDROGEOLOGY

Describe geologic formations and the aquifer(s) of concern. Include interconnections, confining layers, discontinuities, composition, hydraulic conductivity and permeability.

The site is located in the Piedmont Lowland Section of the Piedemont Physiographic Province of the Appalachian Highlands. The site is underlain by Triassic-age Brunswick shale which are overlain by surficial, unstratified glacial moraine deposits of the Late Wisconsinan, Pleistocene Age. These surficial moraine deposits are glacial till, which consists of sand, sandy to silty and silty to clayey deposits that are very poorly sorted with approximately 5% to 50% pebbles, cobbles and boulders. Soil borings and monitor well logs from facilities in the immediate vicinity of the Stop and Wash site have identified this glacial till overburden to be approximately 45 to 65 feet thick. Ground water yield is less than 10 gallons per minute (gpm) within the glacial zone with an average hydraulic gradient of approximately 0.002. In 1993, three monitor wells were installed on an adjacent property, known as 912 South Avenue. These monitor well logs are provided in Attachment G.

In June 2008, NJDEP, BEMSA continuously split spooned sampled overburden at the subject site at three boring locations. (Attachment H) Underlying site lithology consisted of red silty sands with cobble fragments in the top 10 feet, which graded into coarse red sand with some pebble and cobble fragments. Shallow ground water was encountered within a coarse silty-sand zone at approximately 30 feet below ground surface (bgs). The NJDEP did not encounter a consistent clay unit prior to encountering ground water across the site. NJDEP installed soil borings into the overburden to approximately 55 feet bgs and did not encounter bedrock at the site.

The underlying bedrock is a reddish-brown Triassic-age Brunswick shale. The Brunswick shale is part of the Lower Jurassic and Upper Triassic portions of the Newark Group. These non-marine reddish-brown and grayish-red siltstone and shales generally trend toward the northeast and dip to the northwest. Several igneous bodies in the form of basalt flows are intercalated within the Newark Group and form the Watchung Mountains, located north of the site. Ground water is present at varying amounts in consolidated and unconsolidated deposits in the region. The Brunswick Formation is utilized as a main aquifer for public drinking water in Middlesex and Union Counties. (Attachment I)

Depth to water table: approximately 30 feet below ground surface
Depth to aquifer of concern: 30 feet
Depth from lowest point of waste disposal/storage to highest seasonal level of the saturated zone of the aquifer of concern: 5 feet
Thickness and permeability of the least permeable layer between the ground surface and the aquifer of concern: Silty sand lenses vary from 0.5 to 2 feet thick, approximate permeability 6 ft/day
Thickness of aquifer: Approximately 45 to 65 feet thick in Plainfield area
Direction of groundwater flow: Northeast to East
Net precipitation at the site in inches: Approximately 3 inches per year
Karst: No
Wellhead Protection Area within 4 miles of the site: Yes (Map 12 and Attachment M)
Does a waste source overlie a Wellhead Protection Area: Yes

B. MONITORING WELL INFORMATION

Briefly discuss why the monitoring wells were installed. Tabulate and discuss contaminants identified in the monitoring wells. Include Well No., sampling date, sampling agency or company, contaminant levels and remediation standards. For each sampling event, list the name, address and certification number of the lab, which performed the analyses. State who conducted the quality assurance review of the data and summarize any data qualifications.

No monitoring wells were installed on the subject property.

In 1993, a ground water investigation was initiated at 912 South Avenue, adjacent to the northern boundary of the former Stop and Wash property. The ground water investigation consisted of the installation and sampling of three monitor wells (MW-1, MW-2 and MW-3) on the 912 South Avenue property. (Map 4) A Preliminary Assessment and Site Investigation (PA/SI), dated November 15, 1994, was conducted by Environmental Strategies and Applications Inc. (ESA) for the 912 South Avenue property to identify any potentially contaminated areas of concern (AOCs) on or around the property and to summarize the monitor well installation and sampling results. (Attachment J)

According to the PA/SI, three monitor wells were installed into the shallow water table on the 912 South Avenue property. The following table provides details of monitor well screen depths and locations that was provided by the ESA Report. Monitor well records that were installed on the 912 South Avenue property. (Attachment G)

Well No.	Screen Depth (feet bgs)	Formation	Location/ Background
MW-1	29 to 39	Pleistocene glacial till	Upgradient, SW corner of 912 South Avenue property
MW-2	33 to 43	Pleistocene glacial till	Side-gradient, SE corner of 912 South Avenue property
MW-3	31.7 to 41.7	Pleistocene glacial till	Downgradient, NE corner of 912 South Avenue property

On November 8, 1993, the depth to ground water at all three monitor wells were recorded by ESA personnel to determine localized ground water flow direction. At that time, ESA had contracted a NJ-licensed surveyor to survey each monitor well. On June 16, 2008 and September 3, 2008, NJDEP, BEMSA also recorded depth to ground water measurements for each of the monitor wells. The following table provides ground water elevations that are based upon the 1993 survey data provided by the ESA PA/SI report.

Well No.	PVC Elevation*	ESA 11/8/93*		NJDEP 6/16/08		NJDEP 9/3/08**	
		DTW	GW Elevation	DTW	GW Elevation	DTW	GW Elevation
MW-1	96.89	36.42	60.47	24.73	72.16	26.05	70.84
MW-2	99.43	39.22	60.21	26.50	72.93	28.71	70.72
MW-3	100.39	40.30	60.09	28.30	72.09	29.59	70.80

NOTES: * ESA PA/SI Report measurements
** NJDEP measurements collected during the activation of the vapor extraction system
DTW = Depth to Water in feet, measured from top of PVC, GW Elevation in feet, equals PVC Elevation minus DTW

Ground water elevation contours were drawn for all three sets of elevations. (Map 4) The 1993 ESA ground water flow calculations identified ground water flow toward the east. The 2008 NJDEP ground water contour maps identified ground water flow toward the northeast. Both NJDEP depth to water measurements were approximately 12 to 12.7 feet above the 1993 ESA data. The NJDEP depth to water measurements are approximately 5-feet above the screened depth of each of the wells; therefore, the water elevations calculated with the NJDEP data may not reflect ground water elevations at the site but hydrostatic elevations across the site. It appears that all three sets of ground water measurements identify a relatively flat ground water gradient with approximately half a foot difference across the site. Regional ground water flow data in the vicinity of the site indicate that shallow ground water is directed toward the northeast to east.

Tabulate contaminants identified in each well. Include well number, contaminant levels and corresponding NJDEP Ground Water Quality Standard (GWQS).

The ground water wells were sampled on March 20, 1993 by ANCO Environmental and analyzed for VOCs at W.A.T.E.R. Works Laboratory in East Orange, New Jersey. Laboratory analytical results reported concentrations of PCE at 38 parts per billion (ppb) in MW-1, 40 ppb in MW-2 and 41 ppb in MW-3. The contaminant TCE was also reported at 2.1 ppb in MW-1 and MW-2. The NJDEP Ground Water Quality Standard (GWQS) for PCE and TCE is 1 ppb.

On June 16, 2008, each well was redeveloped with a bailer and submersible pump for approximately an hour at a rate of approximately 5-gallons per minute, which exceeded the 3 to 5-volume requirement from the NJDEP. Prior to placing the submersible pump into the well, a hand held disposable bailer was placed down the well to remove sediments from the bottom the well. All development water was discharged into a tube of activated granular carbon and then the treated water was discharged onsite.

Nine days after well redevelopment, BEMSA installed two polyethylene diffusion bags (PDBs) within the screened portion of each well. PDBs are passive groundwater sampling devices that are used to collect ground water samples for targeted VOC compounds such as TCE, PCE and their degradation compounds. A PDB was placed approximately 3-feet from the bottom of the well and a second PDB was placed approximately 8-feet from the bottom of each well. On June 25, 2008, BEMSA personnel secured each PDB bag to a braided poly-rope and then weighted down the rope with a 3-pound stainless steel weight. Each PBD was left in the well to equilibrate with ground water for 13 days. On July 8, 2008, BEMSA personnel collected the PDB devices and transferred the water within each bag to laboratory supplied 40-ml bottles for VOC analysis. The samples were analyzed for VOCs by NJDEP Mobile Environmental Laboratory. The NJDEP laboratory data packages with the validation information is included as Attachment K.

Monitor Well Analytical Results for the July 2008 Sampling

Monitor Well	Chemical Name	Cis-1,2 -DCE	Chloroform	TCE	PCE
		NJDEP GWQS			
	Sample Depth	70	70	1	1
MW-1A	29 to 30.5 ft	0.21 J	0.67	0.66	**1.89**
MW-1B	35 to 36.5 ft	0.21 J	0.67	0.66	**1.64**
MW-2A	33 to 34.4 ft	ND	0.78	0.63	**2.76**
MW-2B	38 to 39.5 ft	ND	0.80	0.66	**2.49**
MW-3A	32 to 33.5 ft	ND	1.06	0.50	**2.70**
MW-3B	37 to 38.5 ft	ND	1.03	0.49	**2.25**

NOTES:
Boxes that are bold and highlighted are at a concentration above the NJDEP's GWQS.
Concentrations are in parts per billion (ppb), J = estimated concentration, ND = not detected above laboratory MDL
Trichloroethylene = TCE, Tetrachloroethylene = PCE, Dichloroethelene = DCE

Laboratory analytical results from the July 2008 monitor well sampling reported concentrations PCE in all three wells above the NJDEP GWQS of 1 ppb. Monitor wells MW-1 and MW-2 are installed hydraulically down gradient for the subject property; therefore, monitor ground water migrating onto the 912 South Avenue property. Ground water laboratory analytical results from MW-1 and MW-2 reported PCE concentrations above the NJDEP GWQS to be migrating onto the 912 South Avenue property from an off-site source.

Discuss contaminants identified in the monitoring wells above background and the ground water quality standards and provide the rationale for site attribution. State whether Level 1 or Level 2 contamination is present.

Regional ground water flow and ground water quality data information support that a regional PCE ground water plume exists in shallow aquifer in the vicinity of the site. The 1993 ESA PA/SI concluded that concentrations of PCE and TCE were migrating in ground water onto the 912 South Avenue property from an off-site source. A source of the PCE ground water plume was never named by ESA or NJDEP. The 2008 BEMSA monitor well sampling results supports that ground water has been impacted by PCE contaminants above the NJDEP GWQS on the 912 South Avenue property. To determine the source of the PCE impacted ground water detected on the 912 South Avenue property, the NJDEP performed supplemental ground water sampling in June 2008 on the Stop and Wash property which is discussed in Section C: Other Ground Water Sampling.

C. OTHER GROUND WATER SAMPLING

Discuss any other ground water sampling that has occurred. Tabulate and discuss contaminants identified in the samples. Include sampling date, sampling agency or company, contaminant levels and remediation standards. For each sampling event, list the name, address and certification number of the lab which performed the analyses. State who conducted the quality assurance review of the data and summarize any data qualifications.

Between June 23 and 26, 2008, BEMSA installed 10 borings on the Stop and Wash property, upgradient of the Stop and Wash property and on the 912 South Avenue property utilizing a hydraulically powered soil probing unit called a Geoprobe®. (Map 3) The purpose of the Geoprobe® sampling event was to identify if previously discovered PCE contamination on the 912 South Avenue property was stemming from the Stop and Wash property. The borings were installed at the following locations:

Boring Locations for the Former Stop and Wash Property
June 23 to 26, 2008

Sample No.	Location (Map 3)
SnW-1	Residential Driveway, 900 South Avenue, rear of driveway on NW side of East Sixth Street, Upgradient
SnW-2	NW side of East Sixth Street, adjacent to mid-point of residence on 900 South Avenue, Upgradient
SnW-4	Eastern corner of South Avenue and East Sixth Avenue Intersection, near western corner of residential proeprty on 900 South Avenue, Upgradient
SnW-5	Northeastern side of South Avenue, adjacent to Auto parts store, Upgradient
SnW-6	On 912 South Avenue property, eastern part of parking lot, Offsite and Side gradient

Sample No.	Location (Map 3)
SnW-7	Former Stop and Wash property, property centerline on edge of former building pad and front parking lot off of South Avenue, On site
SnW-8	Former Stop and Wash property, property centerline within former building footprint, On site
SnW-9	Former Stop and Wash property, property centerline within former building footprint, On site
SnW-10	Former Stop and Wash property, property centerline, rear of property within dumpster area, On site
SnW-11	On 912 South Avenue property, southeastern border of former Stop and Wash Property within alley, Side gradient
SnW-14	Duplicate of SnW-6
SnW-15	Duplicate of SnW-10

Borings SnW-8, SnW-9 and SnW-10 were continuously split-spoon sampled into first water and the cores logged to identify any confining layers and the depth of shallow ground water, see Section A: Hydrogeology. Once first water was identified, BEMSA advanced a stainless steel 4-foot screen into the shallow ground water table and collected a ground water sample from that interval. The depth to the shallow water table ranged from 29- to 31-feet bgs. After shallow ground water was collected, the boring was advanced approximately 10-feet below the previous screened depth and ground water samples were collected at continuous intervals until 55-feet bgs. Each discrete ground water sample was screened for PCE and TCE with a field gas chromatograph (GC). BEMSA collected ground water into laboratory supplied 40-ml glass vials to be submitted for VOC analysis. The samples were analyzed for VOCs by Datachem Laboratories, Inc. of Salt Lake City, Utah. Data validation was performed by the USEPA. The laboratory data package with the validation information is included as Attachment F. Sample numbers and locations for each ground water sample collected by the NJDEP are included on the Site and Boring Location Map 3.

Analytical Results for June 23 to 26, 2008 Ground Water Sampling Event

Boring Location	Sample Depth	Carbon Disulfide	Cis-1,2 -DCE	Chloroform	TCE	Toluene	PCE
		NJDEP Ground Water Quality Standards					
		700	70	70	1	600	1
SnW-1	GW-1 (31-35)	11 J	ND	ND	ND	0.41 J	**8**
	GW-2 (41-45)	ND	ND	ND	ND	0.89 J	**1.4 J**
	GW-3 (51-55)	5 J	ND	ND	ND	ND	ND
SnW-2	GW-1 (31-35)	5 J	0.53 J	ND	0.96 J	ND	**4.1 J**
SnW-4	GW-1 (31-35)	ND	ND	ND	0.56 J	ND	**2.6 J**
	GW-2 (41-45)	ND	ND	ND	ND	0.73 J	**1.4 J**
	GW-3 (51-55)	ND	ND	ND	ND	1.4 J	**2.9 J**
SnW-5	GW-1 (31-35)	1.6 J	ND	ND	0.71 J	0.33 J	**2.5 J**
	GW-2 (41-45)	ND	ND	ND	ND	0.59 J	0.86 J

Boring Location	Sample Depth	Carbon Disulfide	Cis-1,2 -DCE	Chloroform	TCE	Toluene	PCE
		NJDEP Ground Water Quality Standards					
		700	70	70	1	600	1
	GW-3 (51-55)	ND	ND	ND	ND	1.7 J	0.81 J
SnW-6*	GW-1 (31-35)*	7.4	ND	1.2 J	ND	0.87 J	**3.3 J**
	GW-2 (41-45)	ND	ND	1.6 J	ND	ND	**1.6 J**
	GW-3 (51-55)	ND	ND	1.3 J	ND	1.4 J	**3.2 J**
SnW-7	GW-1 (29-33)	ND	ND	ND	ND	0.34 J	**2.3 J**
	GW-2 (41-45)	ND	ND	ND	ND	0.26 J	0.77 J
	GW-3 (51-55)	ND	ND	ND	ND	0.46 J	0.54 J
SnW-8	GW-1 (29-33)	ND	ND	0.98 J	0.77 J	ND	**18**
	GW-2 (41-45)	0.31 J	ND	ND	ND	0.36 J	ND
	GW-3 (51-55)	ND	ND	ND	ND	0.40 J	ND
SnW-9	GW-1 (31-35)	ND	0.46 J	1.1 J	0.65 J	0.33 J	**13**
	GW-2 (41-45)	ND	ND	1.4 J	ND	0.24 J	0.82 J
	GW-3 (51-55)	ND	ND	ND	ND	0.86 J	0.79 J
SnW-10**	GW-1 (31-35)**	ND	ND	1.2 J	0.95 J	0.2 J	**25**
	GW-2 (41-45)	ND	ND	1.0 J	ND	0.93 J	**1.0 J**
	GW-3 (51-55)	ND	ND	ND	ND	3.2 J	**1.2 J**
SnW -11	GW-1 (31-35)	0.33 J	ND	1.1 J	0.67 J	0.64 J	**16**
SnW -14*	GW-1 (31-35)*	0.35 J	1.3 J	ND	ND	0.75 J	**3.4 J**
SnW -15**	GW-1 (31-35)**	ND	ND	1.2 J	0.96 J	0.32 J	**23**

NOTES: Boxes that are bold and highlighted are at a concentration above or equal to the NJDEP's GWQS.
Concentrations are in parts per billion (ppb), J is estimated concentration, ND is not detected at a concentration above the laboratory method detection limit.
Trichloroethylene = TCE, Tetrachloroethylene = PCE, ,Dichloroethylene = DCE
* Indicates that a duplicate ground water sample was collected from the location listed
** Indicates that a duplicate ground water sample was collected from the location listed

The contaminant acetone was detected at 17 ppb in ground water at the 51- to 55-foot depth within SnW-9, which is below the acetone GWQS of 6,000 ppb. The contaminant 1,1,2-trichloro-1,2,-trifloethan was reported by the laboratory at an estimated concentration of 1.9 ppb at the 51- to 55-foot depth level within SnW-1 and at an estimated concentration of 0.68 ppb within the 31- to 35-foot depth interval at SnW-8. Currently, the NJDEP does not have a GWQS for 1,1,2-trichloro-1,2,-trifloethane. The NJDEP collected four field blanks during this sampling episode. Analytical laboratory results reported carbon disulfide in two of the field blanks at an estimated concentration of 0.26 ppb and 0.36 ppb. Due to the detection of carbon disulfide in two field blanks, the reported concentrations of carbon disulfide in the onsite ground water samples may not be indicative of concentrations in ground water.

Ground water sampling locations SnW-1 through SnW-5 are background locations that evaluate ground water migrating onto the Stop and Wash property. Shallow ground water was encountered between 28- to 31-feet bgs. Shallow ground water analytical results at the background locations reported PCE ranging from an estimated concentration of 2.5 ppb to 8 ppb, above the NJDEP

GWQS of 1 ppb. Background ground water samples were also collected from the 41-to 45-foot interval and 51- to 55-foot interval. Laboratory analytical results at the deeper ground water zones reported PCE concentrations ranging from non-detect to 2.9 ppb. Based on the direction of ground water flow and the analytical results of locations SnW-1 through SnW-5, it appears that a shallow ground water plume of PCE is migrating onto the Stop and Wash property.

Ground water sampling locations SnW-7 through SnW-10 evaluated ground water quality on the Stop and Wash site. Laboratory analytical results of shallow ground water samples collected within the 31- to 35-foot interval onsite reported PCE concentrations ranging from an estimated 2.3 ppb at SnW-7 to 25 ppb at SnW-10. Ground water samples were also collected at the 41- to 45-foot interval and the 51- to 55-foot interval within each of these boring locations. Analytical results of ground water samples collected at depth onsite did not report PCE concentrations above the NJDEP GWQS of 1 ppb in any of the samples except for location SnW-10. PCE concentrations in ground water at SnW-10 were reported to be the highest of any off or on site samples by the laboratory. Based on background sample results, onsite analytical results and ground water flow direction, a release of PCE to ground water has been documented on the former Stop and Wash property.

Sample locations SnW-6 and SnW-11 were installed on the 912 South Avenue property to identify if contaminated ground water was migrating onto the property from the former Stop and Wash property. Location SnW-11 was installed on the border of the Stop and Wash northeastern property boundary to monitor ground water migrating form the subject site onto the 912 South Avenue property. Shallow ground water analytical results at these locations reported PCE at 16 ppb in SnW-11 and an estimated concentration of 3.3 ppb in SnW-6. Based on shallow ground water results of boring locations, concentrations of PCE are migrating onto the 912 South Avenue property above the NJDEP GWQS that are attributable to the PCE concentrations detected on the Stop and Wash site.

D. POTABLE WELL INFORMATION

Distance to nearest potable well: 2,200-feet northeast
Depth of nearest potable well: 500 feet below ground surface

Identify all public supply wells within 4 miles of the site and tabulate for each aquifer the population utilizing that aquifer for drinking purposes. Include only those populations which utilize wells that have a potential to be impacted, not wells which are actually impacted. Do not list private potable wells individually in this table, but include populations served by these private wells.

See Map 9 and Attachment L: 4-Mile Water Withdrawal Apportionment Table

State whether ground water is blended with surface water, ground water or both prior to distribution:

The American Water Company Elizabethtown Division withdraw ground water from a total of 129 public wells and seven surface water intakes which are blended prior to distribution. The Middlesex

Water Company also blends ground water from 31 wells with surface water from one surface water intake prior to distribution.

Discuss private potable well use within 4 miles of the site. Include depth, formation and distance, if available.

There is no private potable water use within 4 miles of the site, there is only municipal water use within the region.

Discuss the site's source of potable water.

The City of Plainfield's Health records for the facility do not indicate if the former Stop and Wash facility has ever utilized private potable water. According to Mrs. Webb, who worked at the facility and whose parents purchased the facility in 1986, the former Stop and Wash facility has always been connected to the City of Plainfield's public water system.

Discuss information concerning the population utilizing wells that are known to be contaminated with hazardous substances which are attributable to the site. Also include any other evidence of contaminated drinking water or wells closed due to contamination. State whether Level 1 or Level 2 contamination is present.

A release to ground water has been documented attributable to the site. Due to the concentrations detected in ground water at the site and the depth of the ground water impact, the release is not suspected of impacting the public water supply.

Identify any resource uses of ground water within 4 miles of the site (i.e., commercial livestock watering, ingredient in commercial food preparation, supply for commercial aquaculture, supply for major, or designated water recreation area, excluding drinking water use, irrigation of commercial food or commercial forage crops, unusable).

Ground water within 4-miles of the site is used as a drinking water supply for residents and industries in the Plainfield area and for the City of Plainfield emergency water use.

E. LIKELIHOOD OF RELEASE

Discuss the likelihood of a release of contaminants to ground water, including any other information concerning the ground water contamination route. Identify contaminants detected or suspected and provide a rationale for attributing them to the site.

Ground water contamination was discovered at the site by the NJDEP, BEMSA in the 2008 subsurface sampling event. The ground water analytical results from onsite boring SnW-10 revealed PCE at 25 ppb in the shallow aquifer. This location corresponds to the rear of the former Stop and Wash property where property related trash/debris was staged. Ground water samples results at the remaining three boring locations, SnW-7, SnW-8 and SnW-9, identified PCE in shallow ground water at concentrations of 6 ppb to 18 ppb. The boring locations corresponded to the centerline of the former Stop and Wash facility were potential drains from the facility were located that discharged to the sanitary sewer on the front of the property. Up-gradient shallow ground water samples identified that background concentrations of PCE are migrating onto the former Stop and Wash property. Background concentrations were reported to range from 2.5 ppb to 8.0 ppb in the shallow aquifer. Ground water was determined to flow toward the northeast to east indicating that the highest detection of PCE contamination was stemming from the former Stop and Wash property. The detected PCE concentrations onsite can be attributed to historical operations on the subject property; however, there is a regional PCE shallow ground water impact that is also contributing to PCE concentrations detected on site. ?

In 2007 and 2008, the NJDEP, Bureau of Construction performed indoor air and soil vapor sampling on the adjacent property (aka. 912 South Avenue and Al and Jeans Daycare) to identify potential air impacts at the day care facility. The chlorinated compounds PCE and TCE were identified in air concentrations within the Al and Jeans Daycare facility and in soil vapor outside the facility above NJDEP Vapor Intrusion Guidelines. The vapor survey did not pinpoint a source of the air exceedances on the adjacent property. The shallow ground water table was identified to be approximately 28- to 30-feet bgs. The highest concentration of PCE detected in ground water that had the potential to migrate underneath the Al and Jeans facility was reported to be 16 ppb at location SnW-11. BEMSA collected a ground water sample from the shallow aquifer at sampling point SnW-6, located approximately 5-feet from the location of the soil vapor point with the highest exceedance of PCE and 10-feet from the Al and Jeans Day care facility. The ground water analytical results of sampling point SnW-6 reported a PCE concentration of 3 ppb. Ground water analytical results support that a shallow PCE ground water plume originating from the Stop and Wash site is migrating onto the 912 South Avenue property; however, it can not be concluded that the concentrations detected in shallow ground water are impacting the indoor air of the facility.

PART VI: SURFACE WATER ROUTE

A. SURFACE WATER

Does a migration pathway to surface water exist? Yes
Flood plain: within a 500-year flood plain (Map 11)
Size of drainage area for sources at the site in acres: approximately 0.5-acres
2-year, 24-hour rainfall in inches: 3.0 inches average rainfall
Does contaminated ground water discharge to surface water? No
Identify known or potentially contaminated surface water bodies. Follow the pathway of the surface water and indicate all adjoining bodies of water along a route of 15 stream miles.

Surface Water Body	Distance from Site (miles)	Flow (cfs)	Usage(s)
Green Brook	1-mile	2.1	FW2-NT
Stony Brook	3-miles	1.9	FW2-NT
Bound Brook	7-miles	20	FW2-NT
Ambrose Brook	9.5-miles	1.9	FW2-NT
Raritan River	10-miles	297	FW2-NT

NOTES: FW2-NT is Freshwater used for recreational fishery, non-trout.

Identify drinking water intakes and fisheries within 15 miles downstream (or upstream in tidal areas) of the site. For each intake or fishery identify the distance from the point of surface water entry, the name of the fishery and/or supplier and population served.

Green Brook is a freshwater recreational fishery located approximately 1-mile southwest of the subject property. Three surface water bodies, Stony Brook, Bound Brook and Ambrose Brook, discharge into Green Brook along the surface water pathway. Green Brook drains into the Raritan River approximately 10-miles from the assumed point of entry. The Raritan River is a freshwater recreational fishery. No drinking water intakes were identified within 15-miles downstream of the subject property along the surface water pathway.

Discuss surface water and/or sediment sampling conducted in relation to the site. Include surface water body, sampling date, sampling agency or company. State whether Level 1 or Level 2 contamination is present for surface water. State whether Level 2 contamination of sediments is present. For each sampling event, list the name, address and certification number of the lab which performed the analyses. State who conducted the quality assurance review of the data and summarize any data qualifications. Discuss visual observations if analytical data are not available (include date of observation).

No surface water or sediment sampling has been conducted in relation to the site.

Determine if a contaminant on site displays bioaccumulative properties. Identify all bioaccumulative substances that may impact the food chain.

No bioaccumulation has been observed nor is one suspected.

Determine if surface water is used for irrigation of commercial food or commercial forage crops, watering of commercial livestock, commercial food preparation or recreation.

Surface water is used for recreational fishing in areas along the Green Brook and Raritan River, no other commercial uses are known at this time.

B. SENSITIVE ENVIRONMENTS

Identify all sensitive environments, including wetlands, along the 15 stream-mile pathway from the site:

Environment Type	Surface Water Body	Flow (cfs)	Distance from Site	Wetland Frontage
Wetlands	Green Brook	2.1	1-mile	20-miles
Wetlands	Raritan River	297	10-miles	10-miles

C. LIKELIHOOD OF RELEASE

Discuss the likelihood of a release of contaminant(s) to surface water, include any additional information concerning the surface water route. Identify contaminants detected and provide a rationale for attributing them to the site. Identify any intakes, fisheries and sensitive environments, listed above, that are or may be actually contaminated by hazardous substances attributed to an observed release from the site.

Shallow ground water has been impacted with PCE at concentrations above the NJDEP GWQS of 1 ppb on the subject property. Pumping of the underlying aquifer by public supply wells have influenced shallow ground water flow in the region. Shallow ground water flow is directed toward the east to northeast, in the direction of Netherwood Wellfield pumping center. The closest surface water body downstream of the subject property is located a mile toward the southwest. A release to surface water from the subject site is not expected. No sampling of surface water has been conducted thus an observed release to surface water has not been documented.

PART VII: AIR ROUTE

A. POPULATION AND SENSITIVE ENVIRONMENTS

Identify populations residing within 4 miles of the site. (Map 10)

Distance (miles)	Population
on site	0
> 0 - 1/4	1231
> 1/4 - 1/2	4828
> 1/2 - 1	17600
> 1 - 2	44,502

Distance (miles)	Population
> 2 - 3	51,701
> 3 - 4	61,798

Identify sensitive environments and wetland acreage within 4 miles of the site. (Map 8)

Distance	Type of environment	Wetland acreage
0 - 1/4	Wetlands	0
> 1/4 - 1/2	Wetlands	3
> 1/2 - 1	Wetlands	45
> 1 - 2	Wetlands	576
> 2 - 3	Wetlands	994
> 3 - 4	Wetlands	1,736

B. LIKELIHOOD OF RELEASE

Describe the likelihood of release of hazardous substances to air. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For an observed release, discuss the supporting analytical evidence and its significance relative to background.

A release of hazardous substances to air is not suspected and has been not been documented on the subject property.

If a release to air is observed or suspected, determine the number of people that reside within the area of air contamination.

No structures are currently located on the subject property. A release of hazardous substances to air is not suspected and has been not been documented on the subject property.

If a release to air is observed, identify any sensitive environments that are located within the area of air contamination.

A release of hazardous substances to air has been observed on an adjacent property, known as 912 South Avenue; however, the release can not be attributed to shallow ground water concentrations of PCE stemming from the subject property.

PART VIII: REMOVAL ACTION AND/OR IEC CONDITION

Discuss conditions which constitute an Immediate Environmental Concern (IEC) or warrant EPA Removal Action consideration (improper storage of incompatible/reactive materials, leaking or unsound containers, inadequate site security, subsurface gas threat).

No IEC exists on the subject property at the time of this report.

PART IX: CONCLUSIONS AND RECOMMENDATIONS

Ground water samples collected by NJDEP, BEMSA in June 2008 indicated the presence of PCE at 25 ppb in shallow groundwater boring SnW-10, installed at the rear portion of the subject property. The rear of the subject property was mainly utilized for staging trash/debris associated with the former Stop and Wash facility. The contaminant PCE was detected at 16 ppb in the shallow groundwater zone at location SnW-11, adjacent to the Stop and Wash northeastern property boundary. Ground water collected from SnW-10 and SnW-11 are hydraulically down-gradient from the subject site and revealed that PCE contamination in the shallow ground water zone is migrating from the site onto the 912 South Avenue property at concentrations that exceed the NJDEP GWQS of 1 ppb for PCE.

Due to the depth of the contamination, ground water flow direction, ground water sampling on and off-site, and the operations conducted at the site, the PCE contamination detected in the shallow ground water zone on the former Stop and Wash property is attributable to the site. The 2008 BEMSA ground water sampling data collected upgradient of the former Stop and Wash property revealed that a background PCE shallow ground water plume was migrating onto the subject site at concentrations ranging from 2.5 ppb to 8 ppb.

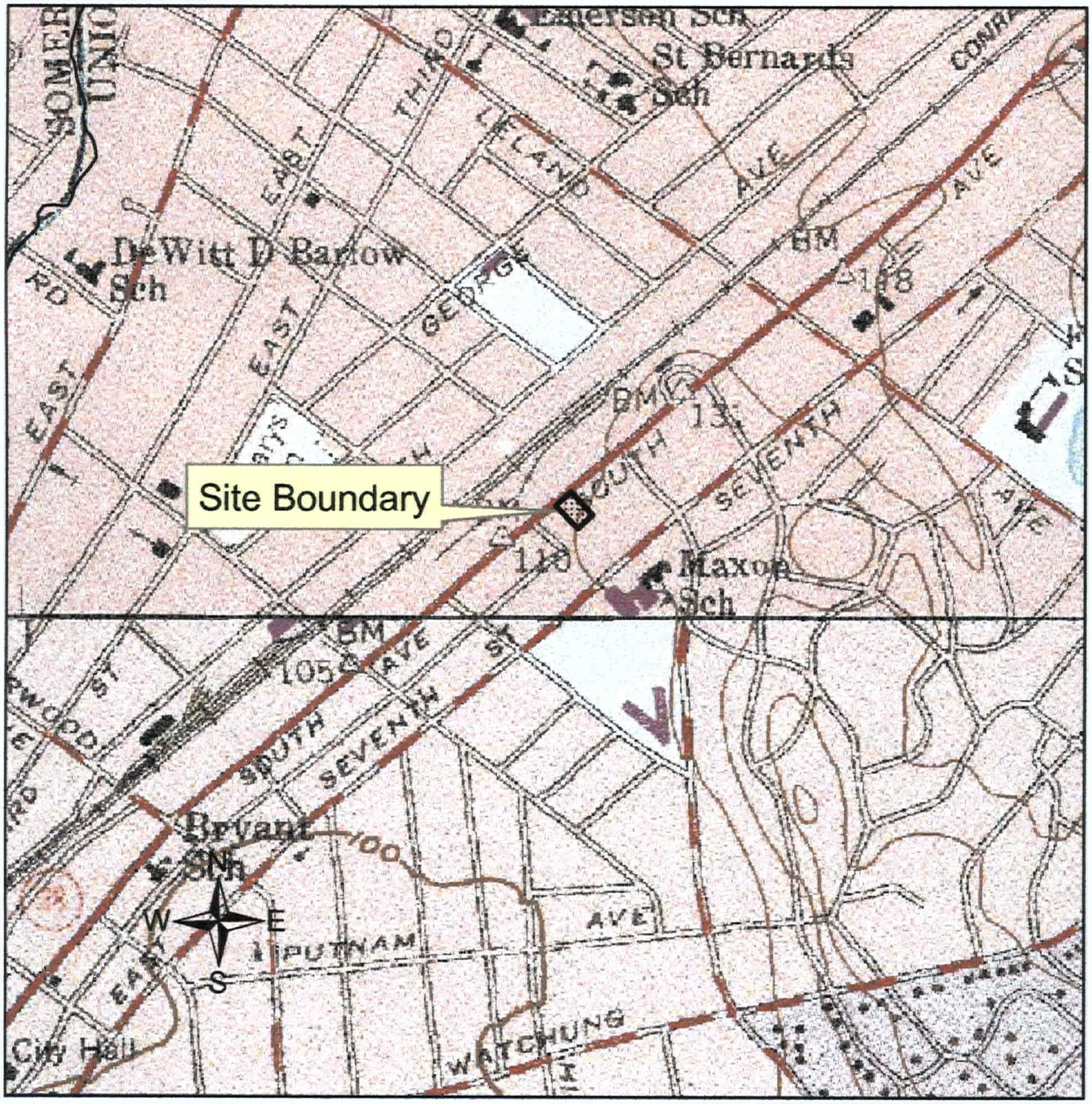
The HRS score for this site is above 28.5; therefore, the site does qualify for further action under CERCLA. The owners of the former Stop and Wash property should comply with N.J.A.C. 7:26E 4.4, Remedial Investigation of Ground Water.

Submitted by: Kimberly L.Ward
Title: Senior Geologist
NJDEP, Division of Remediation Support,
Bureau of Environmental Measurements and Site Assessment
Date: 9/30/2008

PART X: POTENTIALLY RESPONSIBLE PARTIES

NAME	OWNER/OPERATOR/ KNOWN DISCHARGER	CURRENT ADDRESS
Stop and Wash Coin Operated Laundromat Ms. Maryss Louisaint	Owner & Operator	Out of business, unknown
Ruthen Laundromat Inc. Ruth and Henry Kanar	Operator	Out of business, unknown

MAPS



0 500 1,000 2,000 Feet

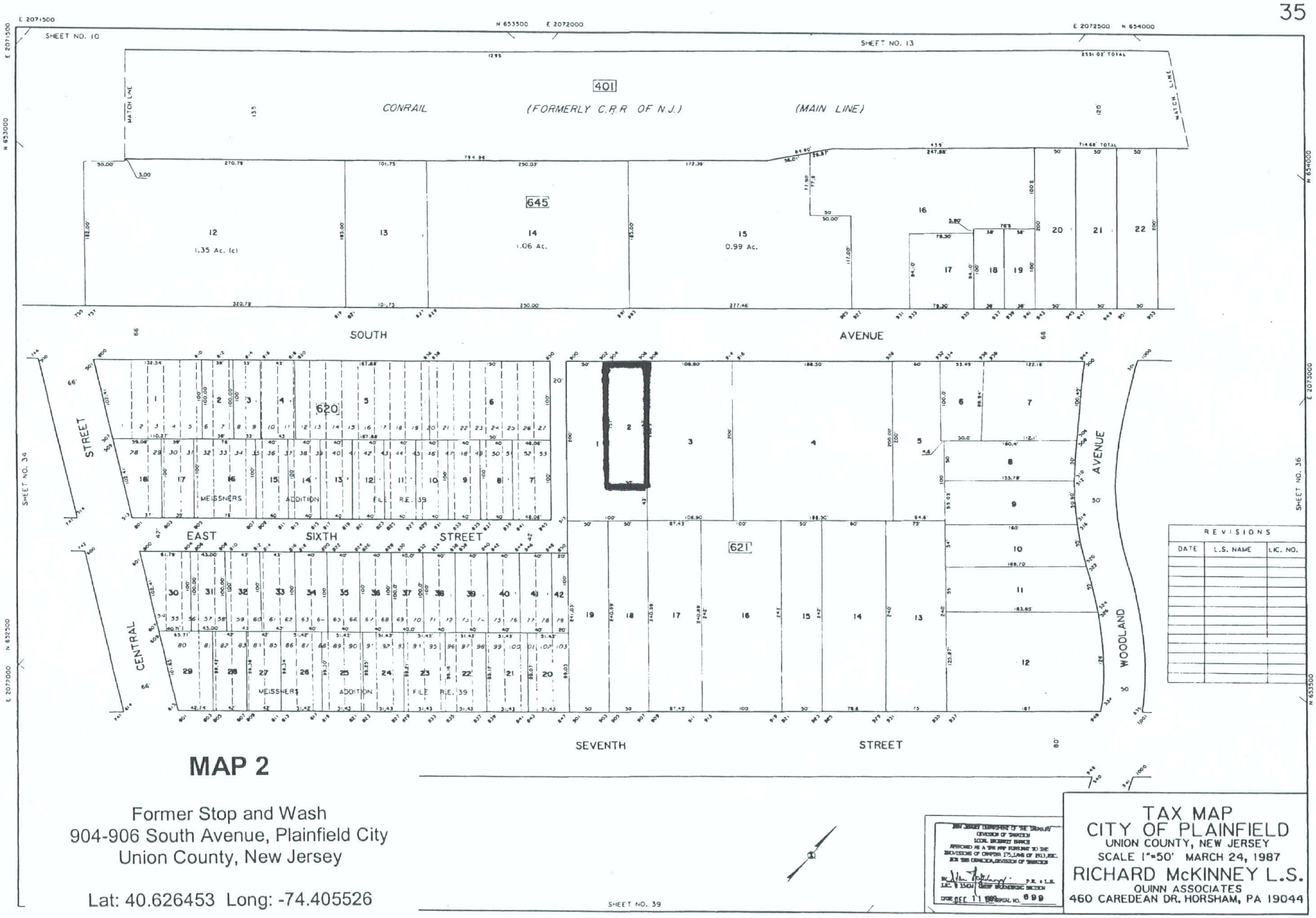
USGS 7.5-minute quadrangle, Chatham

MAP 1

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

USGS Chatham, N.J. Quadrangle (1981)

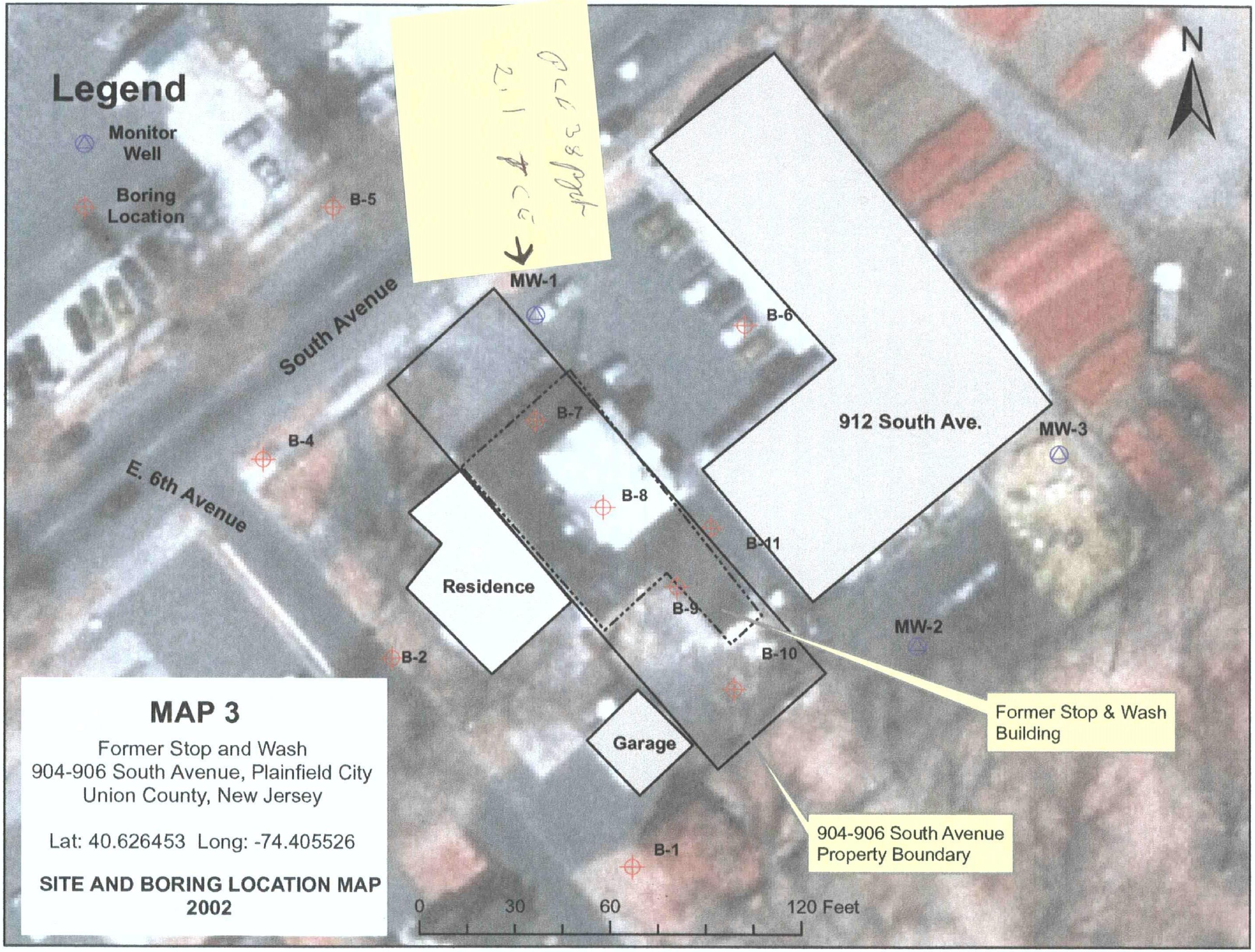


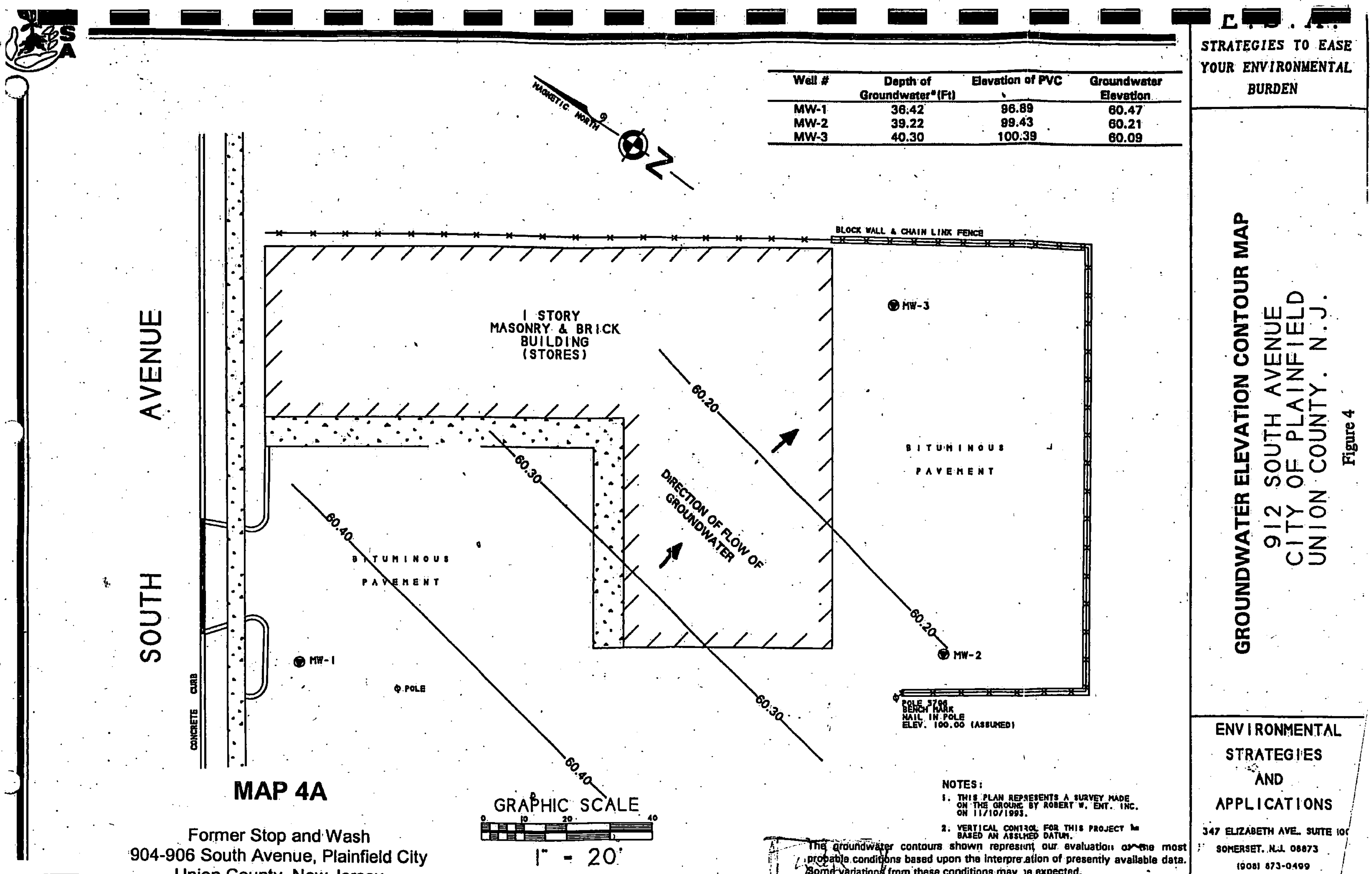
MAP 2

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

CITY OF PLAINFIELD TAX MAP
1987


Legend
Monitor Well
Boring Location
N
South Avenue
E. 6th Avenue
912 South Ave.
Residence
Garage
MW-1
MW-2
MW-3
B-1
B-2
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
Former Stop & Wash Building
904-906 South Avenue Property Boundary
0
30
60
120 Feet
MAP 3
Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey
Lat: 40.626453 Long: -74.405526
SITE AND BORING LOCATION MAP
2002



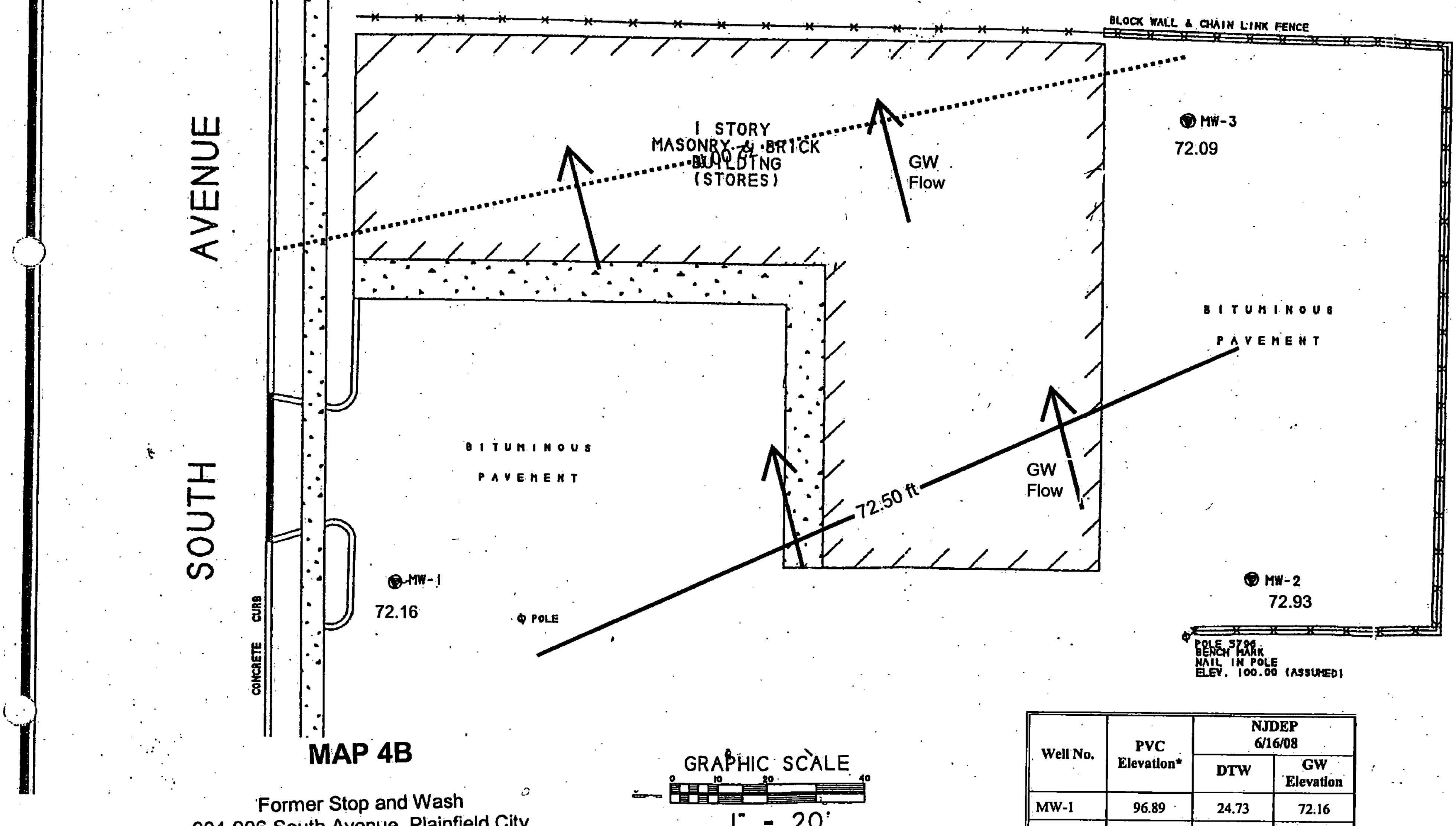
Well #	Depth of Groundwater* (Ft)	Elevation of PVC	Groundwater Elevation
MW-1	36.42	96.89	60.47
MW-2	39.22	99.43	60.21
MW-3	40.30	100.39	60.09

MAP 4A

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

ESA GROUND WATER FLOW MAP
1993



MAP 4B

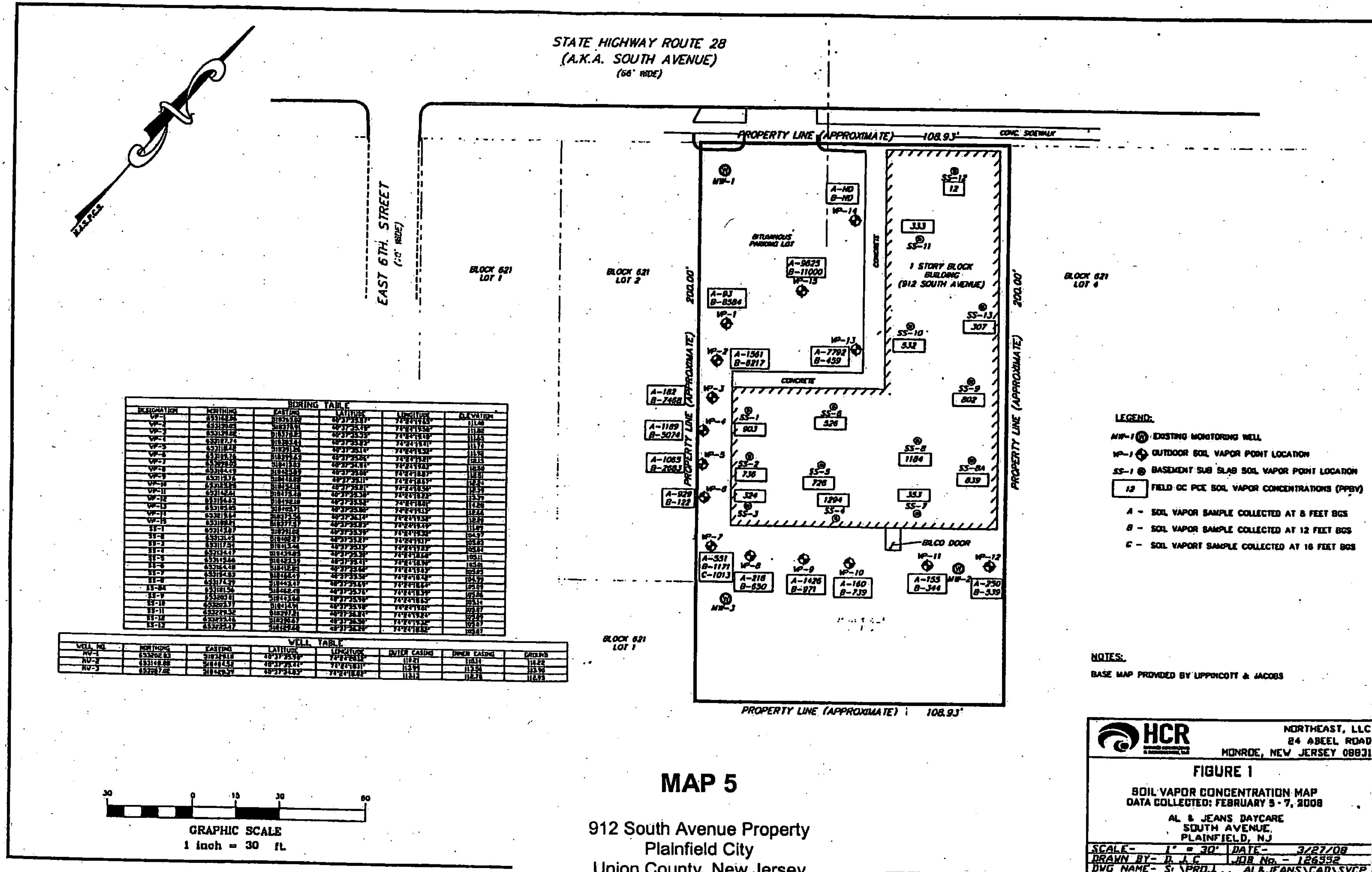
Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

NJDEP GROUND WATER FLOW MAP
2008

Well No.	PVC Elevation*	NJDEP 6/16/08	
		DTW	GW Elevation
MW-1	96.89	24.73	72.16
MW-2	99.43	26.50	72.93
MW-3	100.39	28.30	72.09

NOTES: * ESA PA/SI Report measurements
** NJDEP measurements collected during the activation of the vapor extraction system
DTW = Depth to Water in feet, measured from top of PVC, GW Elevation in feet, equals PVC Elevation minus DTW



BORING TABLE

DESIGNATION	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEVATION
VP-1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VP-15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-8A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SS-13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

WELL TABLE

WELL NO.	NORTHING	EASTING	LATITUDE	LONGITUDE	OUTER CASING	INNER CASING	GROUND
MW-1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MW-3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MAP 5

912 South Avenue Property
Plainfield City
Union County, New Jersey

912 SOUTH AVENUE
SOIL VAPOR CONCENTRATION MAP
March 27, 2008

MAPQUEST.

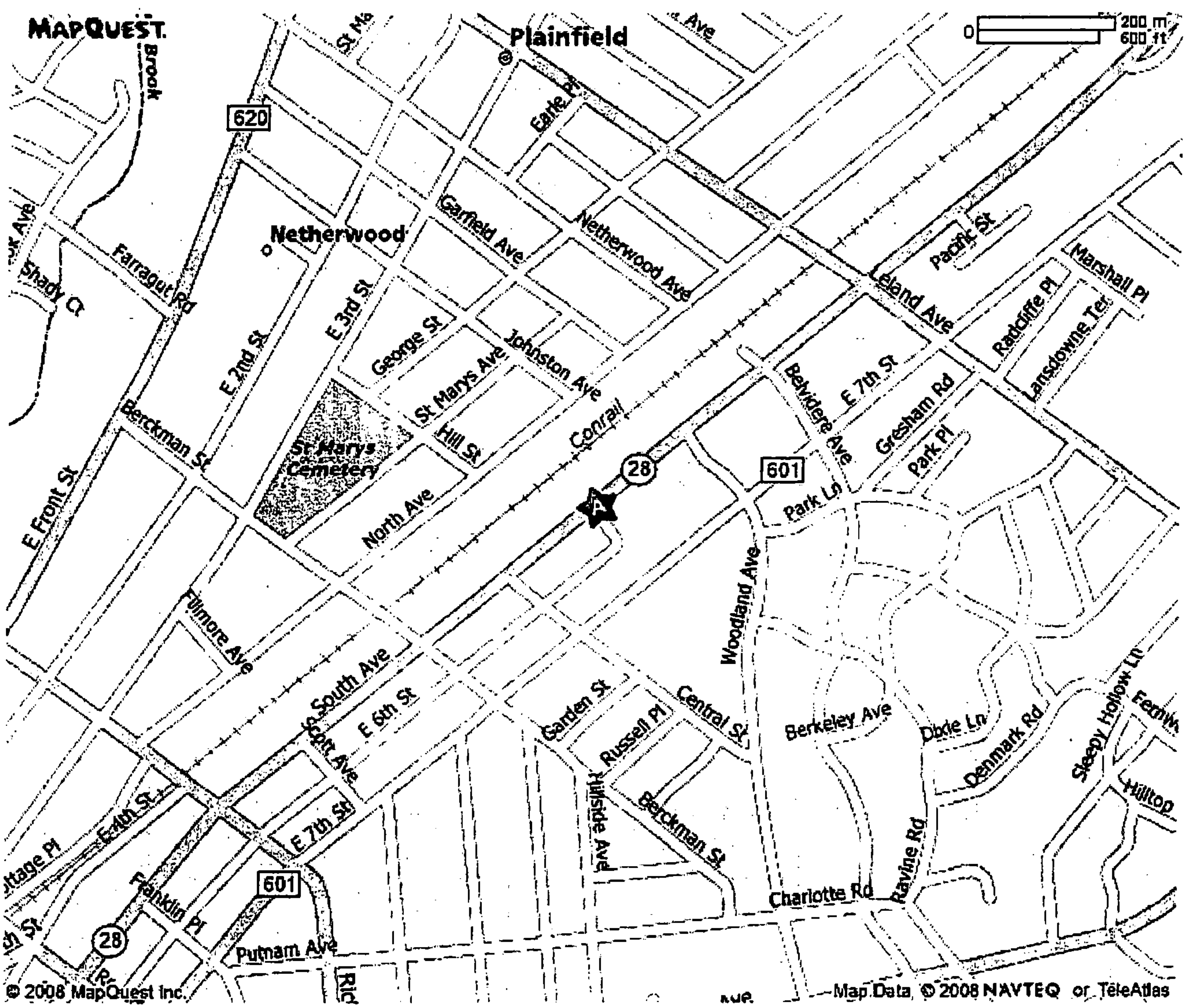
MAP 6

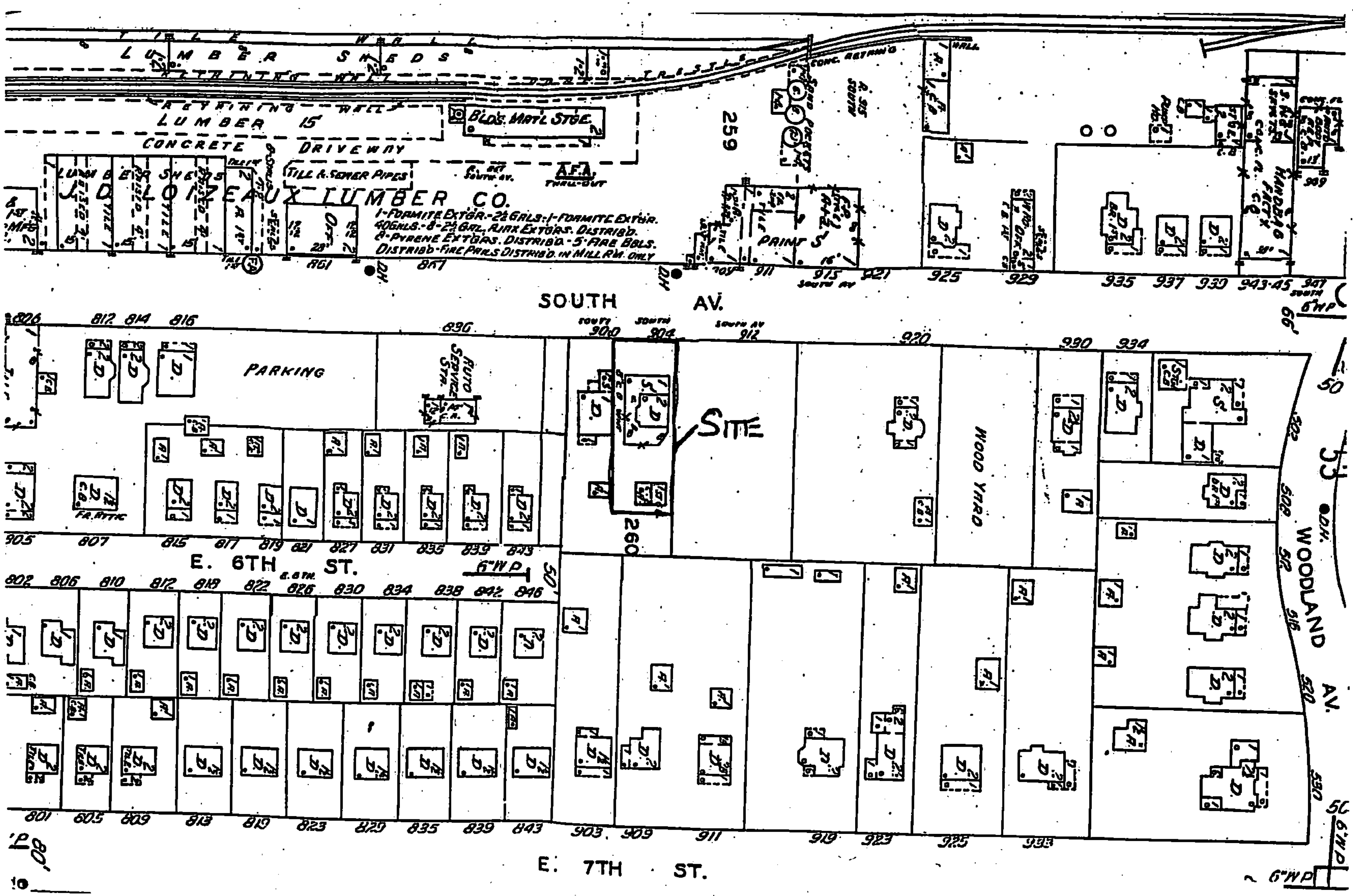
Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

MAPQUEST® STREET MAP
2008

A: 904 South Ave, Plainfield, NJ 07062-1852





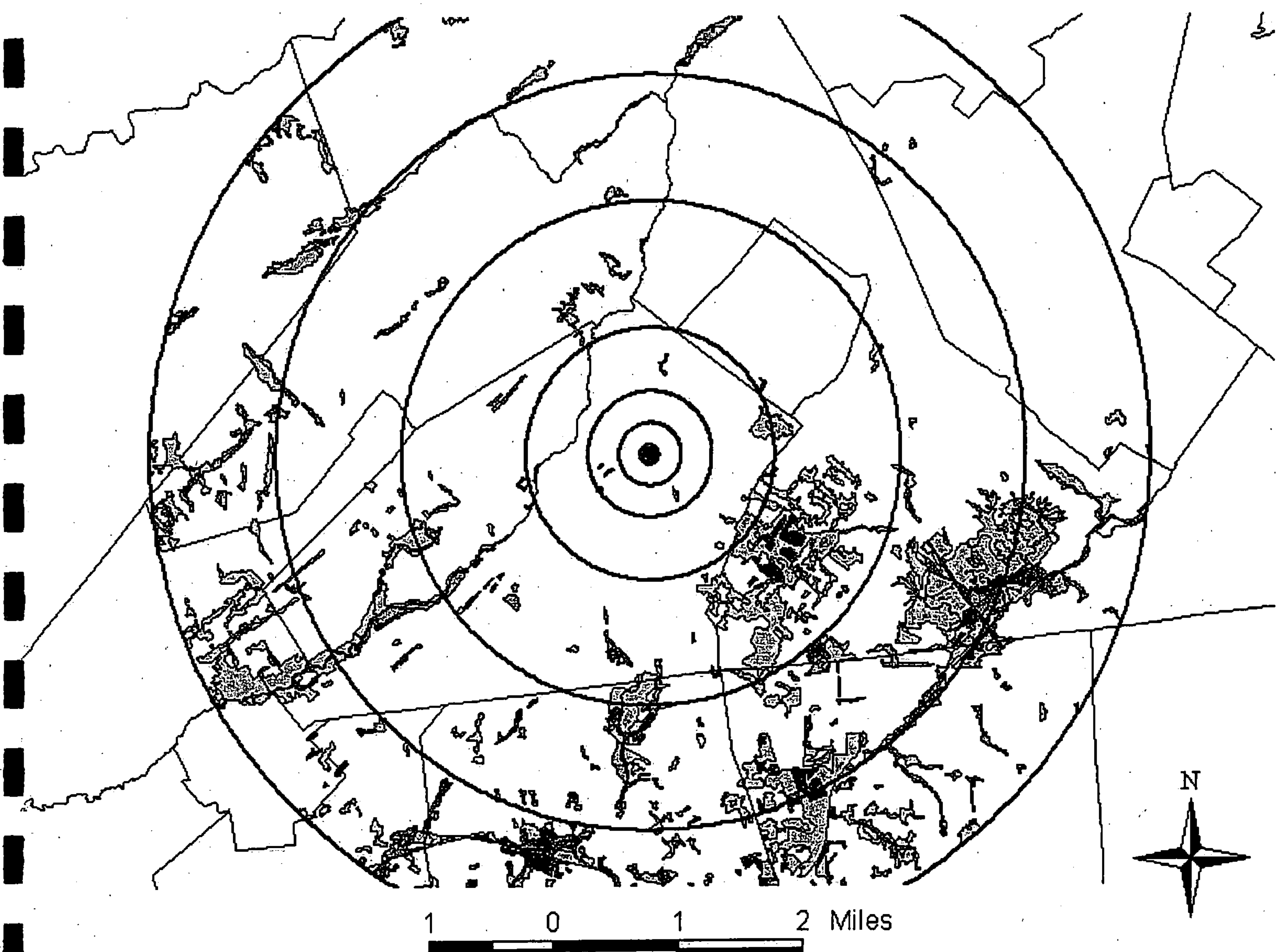
MAP 7

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

SANBORN FIRE INSURANCE MAP
1963

MAP 8
NJDEP GIS Wetlands Map
Stop and Wash, 904-906 South Avenue
Plainfield City, Union County
Lat: 40° 37' 35.00" , Long: -74° 24' 20.00"



Ring	1	(0.00- 0.25)	has	Wetlands Acres:	0
Ring	2	(0.25- 0.50)	has	Wetlands Acres:	3
Ring	3	(0.50- 1.00)	has	Wetlands Acres:	45
Ring	4	(1.00- 2.00)	has	Wetlands Acres:	576
Ring	5	(2.00- 3.00)	has	Wetlands Acres:	994
Ring	6	(3.00- 4.00)	has	Wetlands Acres:	1736

*Based on 1986 Land Use/Land Cover Data

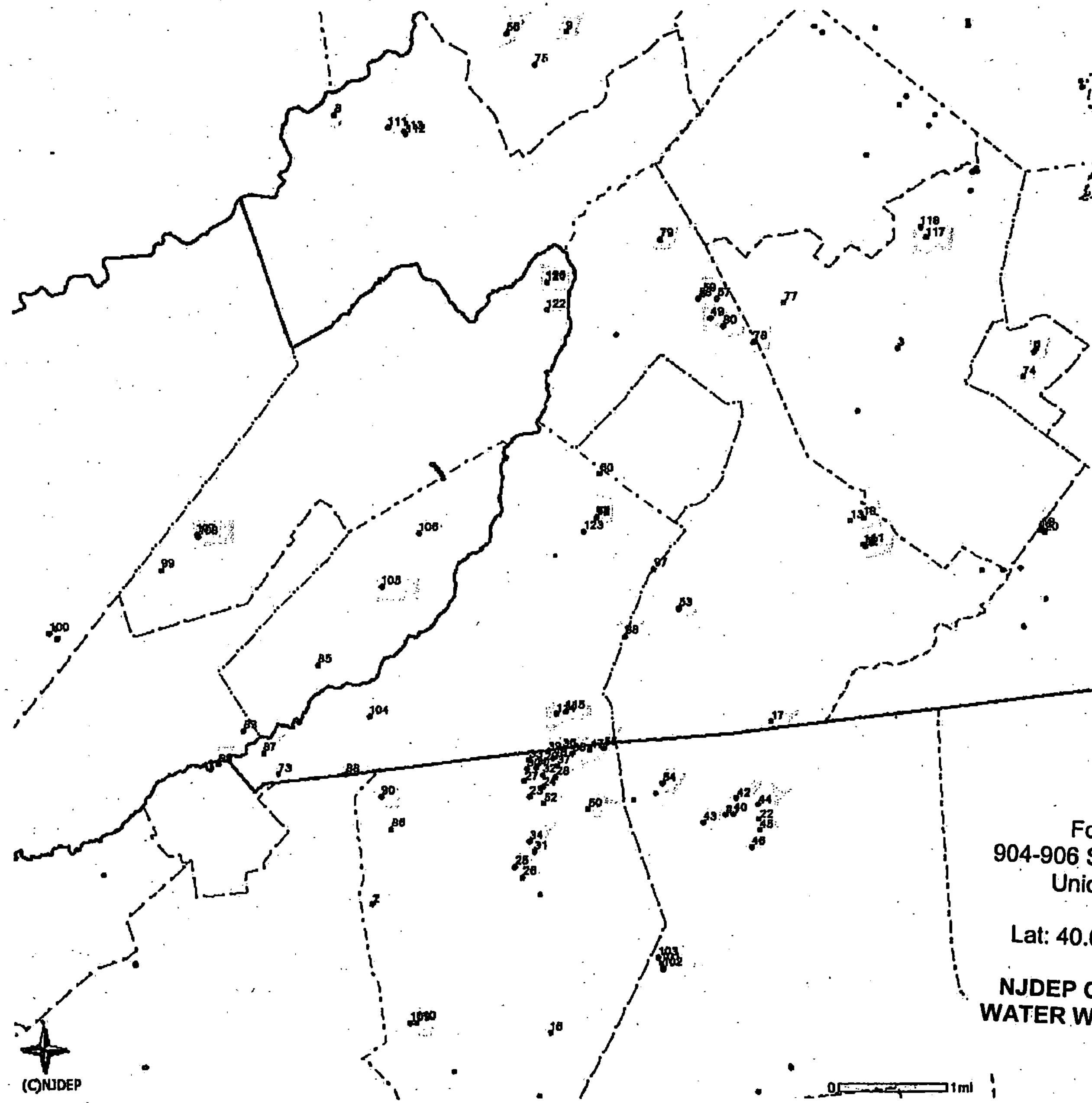
100,000 GPD WATER WITHDRAWAL POINTS
WITHIN 5 Miles OF :
X : 518339
Y : 653104

40.37.35
74.24.20

SCALE : 1 : 63,360

PLOT PRODUCED BY :
NJDEP
WATER SUPPLY
BUREAU OF WATER ALLOCATION
P.O. Box 426
TRENTON, NJ 08625
DATE : 5/29/2008

SUBJECT TO REVISION



Legend
Water Allocation, Diversion and Monitoring Locations
Municipalities
Counties

MAP 9

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

NJDEP COMPUTER-GENERATED
WATER WITHDRAWAL POINTS MAP
May 29, 2008

Last refresh: 6/3/2008 08:28:49 PM

Withdrawal Points Tabular Data

Sequence Number (BWA)	PI ID Number (Preferred NJEMS ID)	PI Name	Activity Number	SI Category Code	SI Designation	SI Description	Distance From XY Origin - ft. (BWA)	County Code (Location Point)	Municipality Code (Location Point)	SPC83X	SPC83Y	XY Accuracy + Units Code	Dep to Top of Open Interval + Units	Dep To Btm of Open Interval + Units	Z (Elevation)	Z Accuracy + Units Code	Geologic Unit Code	Hydrogeologic Unit Code	Rated Pump Capacity + Units Code	BRDGBWASL (BW.
1	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	4500000025	GREEN BROOK NO. 3	19309.07	18	09	501878.14	643009.80				60		2490	3050	60gm	
2	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	4500000023	GREEN BROOK NO. 1	19309.07	18	09	501878.14	643009.80				60		2490	3050	310gm	
3	10000W	INJECTRON CORP	WUR830001	WSWL	4500061135	WELL 1	11928.61	20	12	509281.37	645341.28								400gm	
4	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500012119	PARK AVE 28	11091.61	12	22	516772.04	642123.21	40ft	96.83ft	500ft	75.3209	20Feet	2490	3050	250gm	
5	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500012131	PARK AVE 32	10482.04	12	22	516920.63	642717.95	40ft	87.75ft	501ft	76.9171	20Feet	2490	3050	250gm	
6	10660W	JERSEY CONCRETE CO	WUR910001	WSWL	2500023891	WELL 1	23137.63	12	22	518013.04	629968.26		60ft	285ft	210		2440	3050	87gm	
7	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000274	PARK AVE 18	9393.71	12	22	518683.78	643716.22	40ft	53ft	74ft	78.9024	20Feet	1020	129	1400gm	
8	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000276	PARK AVE 20	9634.98	12	22	519157.74	643503.48	40ft			82.4088	20Feet	1020	129	1450gm	
9	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000020	NETHERWOOD #12	2759.62	20	12	520376.46	654964.69				140		2490	3050	250gm	
10	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000013	NETHERWOOD #5	2759.62	20	12	520376.46	654964.69				140		2490	3050	350gm	
11	11225W	CUSTOM INSTRUMENTS	WUR040001	WSWL	2500012806	WELL 1	13860.37	20	16	525983.26	664665.31	100ft			210	20Feet	2440	3050	100gm	
12	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500005965	TINGLEY SOUTH 9	17163.99	12	05	527930.02	638869.41	40ft	32.67ft	700ft	109.48	20Feet	2490	3050	300gm	
13	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP990001	WSWL	2500009083	CENTRAL AVE WELL	24629.01	20	10	533530.15	672489.49	500ft			142		2440	3050	475gm	
14	10251W	MINDOWASKIN PARK	WUR950001	WSWL	2500012169	WELL 1	19481.34	20	20	535010.35	663182.51	1000ft		246ft	130	10Feet	2440	3050	70gm	
15	2347P	GARWOOD PAPERBOARD MILL	WAP020001	WSWL	4600000194	WELL 3	25240.72	20	06	541561.76	662992.55						2440	3050	300gm	
16	2442P	TWIN BROOKS COUNTRY CLUB	WAP010001	WSIN	STONY BRK	LWR IMPOUNDMENT - CORRECTED	17415.51			500948.50	654039.12	500ft							1250gm	
17	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500000632	GREEN BROOK NO. 6	19309.07	18	09	501878.14	643009.80				60		2490	3050	600gm	
18	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	4500000022	BOARD OF EDUCATION	12659.80	20	12	506811.78	647869.40				68		2490	3050	400gm	

19	2194P	DESIGN AND MOLDING SERVICES	WAP010001	WSWL	2500022656	WELL 2	19107.70	12	17	509364.96	636234.30	100ft	60ft	450ft	48	10Feet	2440	3050	120gm	
20	10862W	FRC-ELECTRICAL INDUSTRIES CORP	WUR950001	WSWL	2500047667	WELL 1	25437.11	20	11	516035.93	678436.25		80ft	200ft	210		2440	3050	100gm	
21	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500012461	PARK AVE 31	10372.16	12	22	517365.34	642777.23	40ft	110.5ft	500ft	74.8022	20Feet	2490	3050	425gm	
22	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000019	NETHERWOOD #11	2759.62	20	12	520376.46	654964.69				140		2490	3050	250gm	
23	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000016	NETHERWOOD #8	2759.62	20	12	520376.46	654964.69				140		2490	3050	350gm	
24	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500011464	SPRAGUE AVE 2	9650.42	12	22	520704.14	643747.53	40ft	93.83ft	110ft	103.719	20Feet	1020	129	790gm	
25	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	2500012631	ABERDEEN RD	4862.03	20	16	523155.16	652438.33				120		2490	3050	390gm	
26	2019P	EDISON ONE COMMERCE CENTER	WAP060001	WSWL	4500000040	WELL 1	20159.96	12	05	523329.00	633571.00	100ft			95	10Feet	2440	3050	550gm	
27	2019P	EDISON ONE COMMERCE CENTER	WAP060001	WARG	SHARED METER SOURCES	WELLS 1 & 2	20435.57			523475.00	633324.00	100ft			93	10Feet				
28	2258P	PLAINFIELD COUNTRY CLUB	WAP030002	WSIN	INTAKE 1	SW001 (CORRECTED)	12252.64	12	05	523554.14	642016.30	100ft			80	20Feet			2100gm	
29	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500066174	TINGLEY NORTH 3	15124.67	12	05	526654.60	640470.15	40ft			85.13	20Feet	2490	3050	450gm	
30	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500066178	TINGLEY NORTH 4	15124.67	12	05	526654.60	640470.15	40ft			79.88	20Feet	2490	3050	750gm	
31	2298P	ECHO LAKE COUNTRY CLUB	WAP060001	WSIN	INTAKE 1	POND 1 (PROPOSED/CORRECTED)	23866.41	20	20	536131.00	669011.00	100ft			155	10Feet			1800gm	
32	2000P	WARRENBROOK GOLF COURSE	WAP990001	WSIN	INTAKE 1	POND (CORRECTED)	19252.44	18	20	499098.59	652419.47	1000ft							1500gm	
33	2442P	TWIN BROOKS COUNTRY CLUB	WAP010001	WSWL	2500012540	WELL 1	17498.24	18	21	500871.36	654140.28	500ft	32ft	210ft	230	5Feet	2350	3199	100gm	
34	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	4500000024	GREEN BROOK NO. 2	19309.07	18	09	501878.14	643009.80				60		2440	3050	650gm	
35	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500002717	GREEN BROOK NO. 11	19309.07	18	09	501878.14	643009.80				60		2490	3050	200gm	
36	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500002716	GREEN BROOK NO. 9	19309.07	18	09	501878.14	643009.80				60		2490	3050	500gm	
37	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500000633	GREEN BROOK NO. 7	19309.07	18	09	501878.14	643009.80				60		2490	3050	80gm	
38	10171W	STONY BROOK LAUNDRY INC	WUR930001	WSWL	2500019211	WELL 1	8575.18	18	14	509893.80	651615.48	1000ft	280ft	50ft					75gm	
39	2492P	FERRO	WAP030001	WSWL	4500049678	WELL PW	23637.52	12	22	511488.20	630480.59	100ft	40ft	350ft	80	20Feet	2490	3050	325gm	

		CORPORATION																	
40	10059W	1225 SOUTH CORP	WUR910001	WSWL	2500013694	WELL 1	1829.83	20	12	519760.50	654255.65	1000ft	82ft	400ft	120	20Feet	2440	3050	200gm
41	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000017	NETHERWOOD #9	2759.62	20	12	520376.46	654964.69				140		2490	3050	350gm
42	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000010	NETHERWOOD #2	2759.62	20	12	520376.46	654964.69				140		2490	3050	225gm
43	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500003970	TINGLEY NORTH 2	14747.24	12	05	527167.88	641291.34	40ft			85.19	20Feet	2490	3050	200gm
44	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500005637	TINGLEY SOUTH 8	16699.32	12	05	528311.36	639708.95	40ft	50ft	629ft	82.22	20Feet	2490	3050	500gm
45	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500012960	PROSPECT ST WELL	16629.63	20	20	529534.91	665399.66	500ft			200		2490	3050	300gm
46	2347P	GARWOOD PAPERBOARD MILL	WAP020001	WSWL	4600000193	WELL 2	25240.72	20	06	541561.76	662992.55			150ft			2440	3050	
47	2347P	GARWOOD PAPERBOARD MILL	WAP020001	WSWL	4600000192	WELL 1	25240.72	20	06	541561.76	662992.55						2440	3050	150gm
48	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	4500000026	GREEN BROOK NO. 4	19309.07	18	09	501878.14	643009.80				60		2490	3050	350gm
49	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500013248	ROCK AVE-PISCATAWAY	17153.20	12	17	504114.78	643516.75				60		2490	3050	150gm
50	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500012632	8TH STREET	14477.06	12	22	509824.13	641395.28				60		2490	3050	240gm
51	2256P	REHEIS INC	WAP990001	WSWL	2500004899	WELL 2	21830.95	20	01	511033.20	673675.86	500ft					2350	3199	200gm
52	2488P	TRC ENV (SANDERS LOCKHEED CO)	WAP030001	WSWL	2500056281	RW1	6723.52	18	21	511707.00	654210.00	20ft	20ft	150ft	90	10Feet		3050	150gm
53	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500066177	SPRING LAKE 6	15779.35	12	22	516669.30	637412.82	40ft	58ft	504ft	61.7586	20Feet	2490	3050	500gm
54	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500066176	SPRING LAKE 8	14493.71	12	22	517266.15	638649.64	40ft	53.33ft	501ft	69.2957	20Feet	2490	3050	650gm
55	11146W	WELDON MATERIALS INC	WUR020001	WSWL	2500022008	WELL 1	13297.92	18	21	517974.31	666396.52	500ft	20ft	20ft	415	10Feet	2390	3199	27gm
56	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000021	GEORGE ST	4547.90	20	12	520528.18	657089.86				140		2490	3050	225gm
57	2553P	SHACKAMAXON GOLF & COUNTRY CLUB	WAP030001	WSWL	2500003550	MAINTENANCE BUILDING WELL	14480.60	20	16	532722.86	654773.43	100ft	22ft	301ft	80	20Feet	2440	3050	85gm
58	2553P	SHACKAMAXON GOLF & COUNTRY CLUB	WAP030001	WSIN	INTAKE 1	POND (WINDING BROOK)	15108.62	20	16	533441.97	653511.83	100ft			80	20Feet			650gm
59	2553P	SHACKAMAXON GOLF & COUNTRY CLUB	WAP030001	WSIN	INTAKE 2	POND (WINDING BROOK)	15410.19	20	16	533738.94	653661.91	100ft			80	20Feet			300gm

60	2481P	MASTERTASTE INC	WAP060001	WSWL	2600004671	RETURN WELL 3	23608.66	20	02	541914.35	654354.70	150ft	50ft	300ft	88	10Feet	2490	3050	0gm
61	2481P	MASTERTASTE INC	WAP060001	WSWL	2600082785	WELL 1	23745.17	20	02	542060.06	654170.44	150ft	52ft	300ft	80	10Feet	2490	3050	240gm
62	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500012665	ROCK AVE-GREEN BROOK	17426.52	18	09	503111.55	644629.36				61		2490	3050	350gm
63	5394	NJ AMERICAN WATER ITC	WAP920001	WSWL	2500037626	OW-2	23905.62	20	05	507643.04	674482.98								
64	11146W	WELDON MATERIALS INC	WUR020001	WSWL	2500010634	WELL 2	13297.92	18	21	517974.31	666396.52	500ft	22ft	22ft	415	10Feet	2390	3199	40gm
65	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000275	PARK AVE 19	10205.64	12	22	518413.72	642898.23	40ft	56.75ft	78ft	77.755	20Feet	1020	129	1100gm
66	10659W	MUHLENBERG HOSPITAL	WUR910001	WSWL	2500010488	WELL 3	7568.23	20	12	518844.87	645552.30	500ft			96	5Feet	2440	3050	320gm
67	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500066179	MAPLE AVE 1	12450.49	12	22	519914.53	640753.22	40ft	97.75ft	351ft	79.9876	20Feet	2490	3050	600gm
68	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000009	NETHERWOOD #1	2759.62	20	12	520376.46	654964.69				140		2490	3050	225gm
69	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500000649	JERUSALEM ROAD #2	14336.73	20	16	525373.21	665596.00	500ft			170		2490	3050	150gm
70	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500004516	TINGLEY SOUTH 5	14882.41	12	05	525554.24	640087.29	40ft	40.17ft	532ft	79.17	20Feet	2490	3050	300gm
71	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500066180	TINGLEY SOUTH 7	16238.20	12	05	528271.72	640257.69	40ft	45ft	608ft	82.19	20Feet	2490	3050	300gm
72	2298P	ECHO LAKE COUNTRY CLUB	WAP060001	WSIN	DECORATIVE POND INTAKE	RECIRCULATION PUMP (PROPOSED)	23745.28	20	20	536394.00	668526.00	500ft			146	10Feet			200gm
73	2000P	WARRENBROOK GOLF COURSE	WAP990001	WSWL	2500012669	WELL 1	24993.01	18	20	493624.37	649382.79	1000ft			280	5Feet	2440	3050	236gm
74	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500002715	GREEN BROOK NO. 8	19309.07	18	09	501878.14	643009.80				60		2490	3050	150gm
75	2319P	NATIONAL STARCH & CHEMICAL (FORMER)	WAP010001	WSWL	2500011751	WELL 6	17125.63	20	12	504886.64	642505.25	100ft			60		2440	3050	700gm
76	2194P	DESIGN AND MOLDING SERVICES	WAP010001	WSWL	4500000252	WELL 1	19107.70	12	17	509364.96	636234.30	100ft		390ft	48	10Feet	2440	3050	120gm
77	2256P	REHEIS INC	WAP990001	WSWL	2500013038	WELL 4	21709.88	20	01	511110.31	673574.73	500ft					2350	3199	280gm
78	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500011822	PARK AVE 27	11309.94	12	22	517676.87	641813.05	40ft	104.75ft	501ft	74.3741	20Feet	2490	3050	350gm
79	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500012130	PARK AVE 30	10059.20	12	22	517771.76	643060.40	40ft	97.83ft	500ft	76.1146	20Feet	2490	3050	350gm
80	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000277	PARK AVE 21	9553.27	12	22	517971.98	643557.38	40ft			77.0988	20Feet	1020	129	1000gm
81	11146W	WELDON MATERIALS INC	WUR020001	WSWL	4500061137	WELL 4	13297.92	18	21	517974.31	666396.52	1000ft					2390	3199	40gm
82	10660W	JERSEY CONCRETE CO	WUR910001	WSWL	2500026404	WELL 2	23137.63	12	22	518013.04	629968.26		53ft	340ft	180		2440	3050	82gm
		MIDDLESEX																	

83	5293X	WATER CO	WAP060001	WSWL	2500012120	PARK AVE 29	10792.60	12	22	518312.51	642311.03	40ft	108.67ft	500ft	75.5706	20Feet	2490	3050	730gm
84	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000018	NETHERWOOD #10	2759.62	20	12	520376.46	654964.69				140		2490	3050	350gm
85	2258P	PLAINFIELD COUNTRY CLUB	WAP030002	WSWL	4500000307	WELL 2	9663.01	12	05	520698.04	643733.00	100ft			160	5Feet	2440	3050	75gm
86	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500007173	GLENSIDE AVE WELL	16175.51	20	16	523520.04	668426.87	500ft			200		2490	3050	135gm
87	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500000130	JERUSALEM ROAD #1	14627.01	20	16	525604.12	665798.69	500ft			170		2490	3050	300gm
88	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500004517	TINGLEY SOUTH 6	15653.25	12	05	528235.54	640975.94	40ft		540ft	72.5	20Feet	2490	3050	400gm
89	2553P	SHACKAMAXON GOLF & COUNTRY CLUB	WAP030001	WSWL	2500003551	POOL WELL	15022.10	20	16	533352.56	653606.03	100ft		300ft	80	20Feet	2440	3050	60gm
90	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000279	PARK AVE 24	10021.74	12	22	517006.67	643170.80	40ft			78.8134	20Feet	1020	129	450gm
91	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500066175	SPRING LAKE 9	14010.70	12	22	517028.86	639154.28	40ft	85.25ft	500ft	66.7007	20Feet	2490	3050	350gm
92	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500011815	PARK AVE 25	12095.43	12	22	517713.51	641024.35	40ft			72.8338	20Feet	2490	3050	850gm
93	11146W	WELDON MATERIALS INC	WUR020001	WSWL	2500008381	WELL 3	11982.95	18	21	517975.71	665081.05	500ft	26ft	26ft	415	10Feet	2390	3199	75gm
94	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000015	NETHERWOOD #7	2759.62	20	12	520376.46	654964.69				140		2490	3050	350gm
95	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000014	NETHERWOOD #6	2759.62	20	12	520376.46	654964.69			350ft	140		2490	3050	
96	2019P	EDISON ONE COMMERCE CENTER	WAP060001	WSWL	2500021275	WELL 2	20674.10	12	05	523569.00	633102.00	100ft			91	10Feet	2440	3050	460gm
97	2258P	PLAINFIELD COUNTRY CLUB	WAP030002	WSWL	2500063021	WELL 1	6581.93	12	05	524391.38	650517.33	100ft			185	5Feet	2440	3050	300gm
98	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500000800	JERUSALEM ROAD #3	14813.48	20	16	526297.96	665597.28	500ft			165		2490	3050	150gm
99	10256W	ASH BROOK GOLF COURSE	WUR880001	WSWL	4500061136	ASH BROOK	13253.53	20	16	528872.03	645059.44				60	20Feet	2490	3050	150gm
100	2553P	SHACKAMAXON GOLF & COUNTRY CLUB	WAP030001	WSWL	2500060986	TEST WELL	15148.27	20	16	533380.00	654902.00	500ft			80	20Feet	2440	3050	
101	2298P	ECHO LAKE COUNTRY CLUB	WAP060001	WARG	IRRIGATION SOURCES	WELLS 2 & 3 AND POND 1 (PROPOSED/CORRECTED)	23866.41	20	20	536131.00	669011.00	100ft			155	10Feet			
102	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500000572	GREEN BROOK NO. 5	19309.07	18	09	501878.14	643009.80				60		2490	3050	315gm
103	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN	WAP980001	WSWL	2500012961	5TH STREET	14716.65	20	12	508126.34	642507.18				60		2490	3050	240gm

		WATER																		
104	2256P	REHEIS INC	WAP990001	WSWL	2500020573	WELL 5	22288.70	20	01	510262.67	673877.65	500ft					2350	3199	500gm	
105	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP980001	WSWL	2500013354	CLINTON AVE	15569.93	12	22	510288.18	639776.59				72		2490	3050	475gm	
106	2492P	FERRO CORPORATION	WAP030001	WSWL	2500064952	WELL 1W	23751.50	12	22	511171.68	630459.28	100ft			80	20Feet	2490	3050	325gm	
107	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500011823	SPRING LAKE 5	15313.65	12	22	516284.21	637928.41	40ft	50.92ft	500ft	63.0901	20Feet	2490	3050	600gm	
108	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500011816	PARK AVE 26	11829.60	12	22	517030.72	641346.55	40ft	67.25ft	495ft	72.2234	20Feet	2490	3050	400gm	
109	10572W	FABLOK MILLS	WUR950001	WSWL	2500010333	WELL 1	23833.76	20	11	517423.91	676919.79	500ft	49ft	200ft	250	20Feet	2350	3199	125gm	
110	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	4500000278	PARK AVE 22	10717.38	12	22	517675.86	642406.75	40ft			75.1303	20Feet	2490	3050	320gm	
111	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500066173	PARK AVE 23	9844.54	12	22	518207.28	643259.94	40ft	58.5ft	73.5ft	77.0988	20Feet	1020	129	700gm	
112	10659W	MUHLENBERG HOSPITAL	WUR910001	WSWL	4500000042	WELL 1	7653.11	20	12	518382.22	645450.61	500ft			96	5Feet	2440	3050	160gm	
113	11035W	CRESTVIEW CLUB	WUR980001	WSWL	2500005702	WELL 1	25444.55	20	11	518962.66	678540.50	1000ft	38ft	142ft			2490	3050	45gm	
114	5293X	MIDDLESEX WATER CO	WAP060001	WSWL	2500009603	SPRAGUE AVE 1	9566.12	12	22	520020.02	643686.36	40ft	81.33ft	100.5ft	94.3077	20Feet	1020	129	790gm	
115	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000012	NETHERWOOD #4	2759.62	20	12	520376.46	654964.69				140		2490	3050	300gm	
116	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	4500000011	NETHERWOOD #3	2759.62	20	12	520376.46	654964.69				140		2490	3050	450gm	
117	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970003	WSWL	2500009037	PROSPECT AVE	5199.11	20	12	521771.23	649198.53				132		2490	3050	300gm	
118	10348W	SCOTCH HILLS GOLF COURSE	WUR930001	WSWL	2500012138	WELL 1	13904.74	20	16	526608.08	664282.24	1000ft	99ft	450ft	205		2440	3050	150gm	
119	5293X	MIDDLESEX WATER CO	WAP050001	WSWL	2500000408	TINGLEY NORTH 1	15316.87	12	05	527036.31	640495.63	40ft	54ft	402ft	77.05	20Feet	2490	3050	567gm	
120	5020X	ELIZABETHTOWN WATER DBA NJ AMERICAN WATER	WAP970002	WSWL	2500009281	MORSE AVE WELL	14224.16	20	16	528073.55	663474.84	500ft			195		2490	3050	300gm	
121	11049W	PETRO PLASTICS	WUR990001	WSWL	4600052773	WELL 1	24287.40	20	06	541024.70	661777.18	1000ft		252ft			2440	3050	140gm	
122	2347P	GARWOOD PAPERBOARD MILL	WAP020001	WSWL	4600000195	WELL 4	25240.72	20	06	541561.76	662992.55						2440	3050	300gm	
123	2481P	MASTERTASTE INC	WAP060001	WSWL	2600004667	RETURN WELL 2	23527.99	20	02	541837.26	654283.25	150ft	43ft	300ft	80	10Feet	2490	3050	0gm	

Water Allocation Codes

COUNTY CODE	MUNICIPALITY CODE	COUNTY	MUNICIPALITY
01	01	Atlantic	Absecon City
01	02	Atlantic	Atlantic City
01	03	Atlantic	Brigantine City
01	04	Atlantic	Buena Boro
01	05	Atlantic	Buena Vista Twp
01	06	Atlantic	Corbin City
01	07	Atlantic	Egg Harbor City
01	08	Atlantic	Egg Harbor Twp
01	09	Atlantic	Estell Manor City
01	10	Atlantic	Folsom Boro
01	11	Atlantic	Galloway Twp
01	12	Atlantic	Hamilton Twp
01	13	Atlantic	Hammonton Town
01	14	Atlantic	Linwood City
01	15	Atlantic	Longport Boro
01	16	Atlantic	Margate City
01	17	Atlantic	Mullica Twp
01	18	Atlantic	Northfield City
01	19	Atlantic	Pleasantville City
01	20	Atlantic	Port Republic City
01	21	Atlantic	Somers Point City
01	22	Atlantic	Ventnor City
01	23	Atlantic	Weymouth Twp
02	01	Bergen	Allendale Boro
02	02	Bergen	Alpine Boro
02	03	Bergen	Bergenfield Boro
02	04	Bergen	Bogota Boro
02	05	Bergen	Carlstadt Boro
02	06	Bergen	Cliffside Park Boro
02	07	Bergen	Closter Boro
02	08	Bergen	Cresskill Boro
02	09	Bergen	Demarest Boro
02	10	Bergen	Dumont Boro
02	11	Bergen	Elmwood Park Boro
02	12	Bergen	East Rutherford Boro
02	13	Bergen	Edgewater Boro
02	14	Bergen	Emerson Boro
02	15	Bergen	Englewood City
02	16	Bergen	Englewood Cliffs Boro
02	17	Bergen	Fair Lawn Boro
02	18	Bergen	Fairview Boro
02	19	Bergen	Fort Lee Boro
02	20	Bergen	Franklin Lakes Boro
02	21	Bergen	Garfield City
02	22	Bergen	Glen Rock Boro
02	23	Bergen	Hackensack City
02	24	Bergen	Harrington Park Boro
02	25	Bergen	Hasbrouck Heights
02	26	Bergen	Haworth Boro
02	27	Bergen	Hillsdale Boro
02	28	Bergen	Hohokus Boro
02	29	Bergen	Leonia Boro
02	30	Bergen	Little Ferry Boro
02	31	Bergen	Lodi Boro
02	32	Bergen	Lyndhurst Twp
02	33	Bergen	Mahwah Twp
02	34	Bergen	Maywood Boro
02	35	Bergen	Midland Park Boro
02	36	Bergen	Montvale Boro
02	37	Bergen	Moonachie Boro
02	38	Bergen	New Milford Boro
02	39	Bergen	North Arlington Boro
02	40	Bergen	Northvale Boro
02	41	Bergen	Norwood Boro
02	42	Bergen	Oakland Boro
02	43	Bergen	Old Tappan Boro
02	44	Bergen	Oradell Boro
02	45	Bergen	Palisades Park Boro
02	46	Bergen	Paramus Boro
02	47	Bergen	Park Ridge Boro
02	48	Bergen	Ramsey Boro
02	49	Bergen	Ridgefield Boro
02	50	Bergen	Ridgefield Park Village
02	51	Bergen	Ridgewood Village
02	52	Bergen	River Edge Boro
02	53	Bergen	River Vale Twp
02	54	Bergen	Rochelle Park Twp
02	55	Bergen	Rockleigh Boro
02	56	Bergen	Rutherford Boro
02	57	Bergen	Saddle Brook Twp
02	58	Bergen	Saddle River Boro
02	59	Bergen	South Hackensack Twp
02	60	Bergen	Teaneck Twp
02	61	Bergen	Tenafly Boro
02	62	Bergen	Teterboro Boro
02	63	Bergen	Upper Saddle River
02	64	Bergen	Waldwick Boro
02	65	Bergen	Wallington Boro
02	66	Bergen	Washington Twp
02	67	Bergen	Westwood Boro
02	68	Bergen	Woodcliff Lake Boro
02	69	Bergen	Wood-Ridge Boro
02	70	Bergen	Wyckoff Twp
03	01	Burlington	Bass River Twp
03	02	Burlington	Beverly City
03	03	Burlington	Bordentown City
03	04	Burlington	Bordentown Twp
03	05	Burlington	Burlington City
03	06	Burlington	Burlington Twp
03	07	Burlington	Chesterfield Twp
03	08	Burlington	Cinnaminson Twp
03	09	Burlington	Delanco Twp
03	10	Burlington	Delran Twp
03	11	Burlington	Eastampton Twp
03	12	Burlington	Edgewater Park Twp
03	13	Burlington	Evesham Twp
03	14	Burlington	Fieldsboro Boro
03	15	Burlington	Florence Twp
03	16	Burlington	Hainesport Twp
03	17	Burlington	Lumberton Twp
03	18	Burlington	Mansfield Twp
03	19	Burlington	Maple Shade Twp
03	20	Burlington	Medford Twp
03	21	Burlington	Medford Lakes Boro
03	22	Burlington	Moorestown
03	23	Burlington	Mount Holly Twp
03	24	Burlington	Mount Laurel Twp
03	25	Burlington	New Hanover Twp
03	26	Burlington	North Hanover Twp
03	27	Burlington	Palmyra Boro
03	28	Burlington	Pemberton Boro
03	29	Burlington	Pemberton Twp
03	30	Burlington	Riverside Twp
03	31	Burlington	Riverton Boro
03	32	Burlington	Shamong Twp
03	33	Burlington	Southampton Twp

Water Allocation Codes

03	34	Burlington	Springfield Twp
03	35	Burlington	Tabernacle Twp
03	36	Burlington	Washington Twp
03	37	Burlington	Westampton Twp
03	38	Burlington	Willingboro Twp
03	39	Burlington	Woodland Twp
03	40	Burlington	Wrightstown Boro
04	01	Camden	Audubon Boro
04	02	Camden	Audubon Park Boro
04	03	Camden	Barrington Boro
04	04	Camden	Bellmawr Boro
04	05	Camden	Berlin Boro
04	06	Camden	Berlin Twp
04	07	Camden	Brooklawn Boro
04	08	Camden	Camden City
04	09	Camden	Cherry Hill Twp
04	10	Camden	Chesilhurst Boro
04	11	Camden	Clementon Boro
04	12	Camden	Collingswood Boro
04	13	Camden	Gibbsboro Boro
04	14	Camden	Gloucester City
04	15	Camden	Gloucester Twp
04	16	Camden	Haddon Twp
04	17	Camden	Haddonfield Boro
04	18	Camden	Haddon Heights Boro
04	19	Camden	Hi-Nella Boro
04	20	Camden	Laurel Springs Boro
04	21	Camden	Lawnside Boro
04	22	Camden	Lindenwold Boro
04	23	Camden	Magnolia Boro
04	24	Camden	Merchantville Boro
04	25	Camden	Mount Ephraim Boro
04	26	Camden	Oaklyn Boro
04	27	Camden	Pennsauken Twp
04	28	Camden	Pine Hill Boro
04	29	Camden	Pine Valley Boro
04	30	Camden	Runnemede Boro
04	31	Camden	Somerdale Boro
04	32	Camden	Stratford Boro
04	33	Camden	Tavistock Boro
04	34	Camden	Voorhees Twp
04	35	Camden	Waterford Twp
04	36	Camden	Winslow Twp
04	37	Camden	Woodlynne Boro
05	01	Cape May	Avalon Boro
05	02	Cape May	Cape May City
05	03	Cape May	Cape May Point Boro
05	04	Cape May	Dennis Twp
05	05	Cape May	Lower Twp
05	06	Cape May	Middle Twp
05	07	Cape May	North Wildwood City
05	08	Cape May	Ocean City
05	09	Cape May	Sea Isle City
05	10	Cape May	Stone Harbor Boro
05	11	Cape May	Upper Twp
05	12	Cape May	West Cape May Boro
05	13	Cape May	West Wildwood Boro
05	14	Cape May	Wildwood City
05	15	Cape May	Wildwood Crest Boro
05	16	Cape May	Woodbine Boro
06	01	Cumberland	Bridgeton City
06	02	Cumberland	Commercial Twp
06	03	Cumberland	Deerfield Twp
06	04	Cumberland	Downe Twp

06	05	Cumberland	Fairfield Twp
06	06	Cumberland	Greenwich Twp
06	07	Cumberland	Hopewell Twp
06	08	Cumberland	Lawrence Twp
06	09	Cumberland	Maurice River Twp
06	10	Cumberland	Millville City
06	11	Cumberland	Shiloh Boro
06	12	Cumberland	Stow Creek Twp
06	13	Cumberland	Upper Deerfield Twp
06	14	Cumberland	Vineland City
07	01	Essex	Belleville Town
07	02	Essex	Bloomfield Town
07	03	Essex	Caldwell Boro
07	04	Essex	Cedar Grove Twp
07	05	Essex	East Orange City
07	06	Essex	Essex Fells Boro
07	07	Essex	Fairfield Twp
07	08	Essex	Glen Ridge Boro Twp
07	09	Essex	Irvington Town
07	10	Essex	Livingston Twp
07	11	Essex	Maplewood Twp
07	12	Essex	Millburn Twp
07	13	Essex	Montclair Town
07	14	Essex	Newark
07	15	Essex	North Caldwell Boro
07	16	Essex	Nutley Town
07	17	Essex	Orange City
07	18	Essex	Roseland Boro
07	19	Essex	South Orange Village
07	20	Essex	Verona Boro
07	21	Essex	West Caldwell Twp
07	22	Essex	West Orange Town
08	01	Gloucester	Clayton Boro
08	02	Gloucester	Deptford Twp
08	03	Gloucester	East Greenwich Twp
08	04	Gloucester	Elk Twp
08	05	Gloucester	Franklin Twp
08	06	Gloucester	Glassboro Boro
08	07	Gloucester	Greenwich Twp
08	08	Gloucester	Harrison Twp
08	09	Gloucester	Logan Twp
08	10	Gloucester	Mantua Twp
08	11	Gloucester	Monroe Twp
08	12	Gloucester	National Park Boro
08	13	Gloucester	Newfield Boro
08	14	Gloucester	Paulsboro Boro
08	15	Gloucester	Pitman Boro
08	16	Gloucester	South Harrison Twp
08	17	Gloucester	Swedesboro Boro
08	18	Gloucester	Washington Twp
08	19	Gloucester	Wenonah Boro
08	20	Gloucester	West Deptford Twp
08	21	Gloucester	Westville Boro
08	22	Gloucester	Woodbury City
08	23	Gloucester	Woodbury Heights Boro
08	24	Gloucester	Woolwich Twp
09	01	Hudson	Bayonne City
09	02	Hudson	East Newark Boro
09	03	Hudson	Guttenberg Town
09	04	Hudson	Harrison Town
09	05	Hudson	Hoboken City
09	06	Hudson	Jersey City
09	07	Hudson	Kearny Town
09	08	Hudson	North Bergen Twp

Water Allocation Codes

09	09	Hudson	Secaucus Town
09	10	Hudson	Union City
09	11	Hudson	Weehawken Twp
09	12	Hudson	West New York Town
10	01	Hunterdon	Alexandria Twp
10	02	Hunterdon	Bethlehem Twp
10	03	Hunterdon	Bloomsbury Boro
10	04	Hunterdon	Califon Boro
10	05	Hunterdon	Clinton Town
10	06	Hunterdon	Clinton Twp
10	07	Hunterdon	Delaware Twp
10	08	Hunterdon	East Amwell Twp
10	09	Hunterdon	Flemington Boro
10	10	Hunterdon	Franklin Twp
10	11	Hunterdon	Frenchtown Boro
10	12	Hunterdon	Glen Gardner Boro
10	13	Hunterdon	Hampton Boro
10	14	Hunterdon	High Bridge Boro
10	15	Hunterdon	Holland Twp
10	16	Hunterdon	Kingwood Twp
10	17	Hunterdon	Lambertville City
10	18	Hunterdon	Lebanon Boro
10	19	Hunterdon	Lebanon Twp
10	20	Hunterdon	Milford Boro
10	21	Hunterdon	Raritan Twp
10	22	Hunterdon	Readington Twp
10	23	Hunterdon	Stockton Boro
10	24	Hunterdon	Tewksbury Twp
10	25	Hunterdon	Union Twp
10	26	Hunterdon	West Amwell Twp
11	01	Mercer	East Windsor Twp
11	02	Mercer	Ewing Twp
11	03	Mercer	Hamilton Twp
11	04	Mercer	Hightstown Boro
11	05	Mercer	Hopewell Boro
11	06	Mercer	Hopewell Twp
11	07	Mercer	Lawrence Twp
11	08	Mercer	Pennington Boro
11	09	Mercer	Princeton Boro
11	10	Mercer	Princeton Twp
11	11	Mercer	Trenton City
11	12	Mercer	Washington Twp
11	13	Mercer	West Windsor Twp
12	01	Middlesex	Carteret Boro
12	02	Middlesex	Cranbury Twp
12	03	Middlesex	Dunellen Boro
12	04	Middlesex	East Brunswick Twp
12	05	Middlesex	Edison Twp
12	06	Middlesex	Helmetta Boro
12	07	Middlesex	Highland Park Boro
12	08	Middlesex	Jamesburg Boro
12	09	Middlesex	Old Bridge Twp
12	10	Middlesex	Metuchen Boro
12	11	Middlesex	Middlesex Boro
12	12	Middlesex	Milltown Boro
12	13	Middlesex	Monroe Twp
12	14	Middlesex	New Brunswick City
12	15	Middlesex	North Brunswick Twp
12	16	Middlesex	Perth Amboy City
12	17	Middlesex	Piscataway Twp
12	18	Middlesex	Plainsboro
12	19	Middlesex	Sayreville Boro
12	20	Middlesex	South Amboy City
12	21	Middlesex	South Brunswick Twp

12	22	Middlesex	South Plainfield Boro
12	23	Middlesex	South River Boro
12	24	Middlesex	Spotswood Boro
12	25	Middlesex	Woodbridge Twp
13	01	Monmouth	Allenhurst Boro
13	02	Monmouth	Allentown Boro
13	03	Monmouth	Asbury Park City
13	04	Monmouth	Atl Highlands Boro
13	05	Monmouth	Avon-By-The-Sea-Boro
13	06	Monmouth	Belmar Boro
13	07	Monmouth	Bradley Beach Boro
13	08	Monmouth	Brielle Boro
13	09	Monmouth	Colts Neck Twp
13	10	Monmouth	Deal Boro
13	11	Monmouth	Eatontown Boro
13	12	Monmouth	Englishtown Boro
13	13	Monmouth	Fair Haven Boro
13	14	Monmouth	Farmingdale Boro
13	15	Monmouth	Freehold Boro
13	16	Monmouth	Freehold Twp
13	17	Monmouth	Highlands Boro
13	18	Monmouth	Holmdel Twp
13	19	Monmouth	Howell Twp
13	20	Monmouth	Interlaken Boro
13	21	Monmouth	Keansburg Boro
13	22	Monmouth	Keyport Boro
13	23	Monmouth	Little Silver Boro
13	24	Monmouth	Loch Arbour Village
13	25	Monmouth	Long Branch City
13	26	Monmouth	Manalapan Twp
13	27	Monmouth	Manasquan Boro
13	28	Monmouth	Marlboro Twp
13	29	Monmouth	Matawan Boro
13	30	Monmouth	Aberdeen Twp
13	31	Monmouth	Middletown Twp
13	32	Monmouth	Millstone Twp
13	33	Monmouth	Monmouth Beach Boro
13	34	Monmouth	Neptune Twp
13	35	Monmouth	Neptune City Boro
13	36	Monmouth	Tinton Falls Boro
13	37	Monmouth	Ocean Twp
13	38	Monmouth	Oceanport Boro
13	39	Monmouth	Hazlet Twp
13	40	Monmouth	Red Bank Boro
13	41	Monmouth	Roosevelt Boro
13	42	Monmouth	Rumson Boro
13	43	Monmouth	Sea Bright Boro
13	44	Monmouth	Sea Girt Boro
13	45	Monmouth	Shrewsbury Boro
13	46	Monmouth	Shrewsbury Twp
13	47	Monmouth	Lake Como Boro
13	48	Monmouth	Spring Lake Boro
13	49	Monmouth	Spring L Heights Boro
13	50	Monmouth	Union Beach Boro
13	51	Monmouth	Upper Freehold Twp
13	52	Monmouth	Wall Twp
13	53	Monmouth	West Long Branch Boro
14	01	Morris	Boonton Town
14	02	Morris	Boonton Twp
14	03	Morris	Butler Boro
14	04	Morris	Chatham Boro
14	05	Morris	Chatham Twp
14	06	Morris	Chester Boro
14	07	Morris	Chester Twp

Water Allocation Codes

14	08	Morris	Denville Twp
14	09	Morris	Dover Town
14	10	Morris	East Hanover Twp
14	11	Morris	Florham Park Boro
14	12	Morris	Hanover Twp
14	13	Morris	Harding Twp
14	14	Morris	Jefferson Twp
14	15	Morris	Kinnelon Boro
14	16	Morris	Lincoln Park Boro
14	17	Morris	Madison Boro
14	18	Morris	Mendham Boro
14	19	Morris	Mendham Twp
14	20	Morris	Mine Hill Twp
14	21	Morris	Montville Twp
14	22	Morris	Morris Twp
14	23	Morris	Morris Plains Boro
14	24	Morris	Morristown Town
14	25	Morris	Mountain Lakes Boro
14	26	Morris	Mount Arlington Boro
14	27	Morris	Mount Olive Twp
14	28	Morris	Netcong Boro
14	29	Morris	Parsippany Troy-Hills
14	30	Morris	Long Hill Twp
14	31	Morris	Pequannock Twp
14	32	Morris	Randolph Twp
14	33	Morris	Riverdale Boro
14	34	Morris	Rockaway Boro
14	35	Morris	Rockaway Twp
14	36	Morris	Roxbury Twp
14	37	Morris	Victory Gardens Boro
14	38	Morris	Washington Twp
14	39	Morris	Wharton Boro
15	01	Ocean	Barnegat Light Boro
15	02	Ocean	Bay Head Boro
15	03	Ocean	Beach Haven Boro
15	04	Ocean	Beachwood Boro
15	05	Ocean	Berkeley Twp
15	06	Ocean	Brick Twp
15	07	Ocean	Dover Twp
15	08	Ocean	Eagleswood Twp
15	09	Ocean	Harvey Cedars Boro
15	10	Ocean	Island Heights Boro
15	11	Ocean	Jackson Twp
15	12	Ocean	Lacey Twp
15	13	Ocean	Lakehurst Boro
15	14	Ocean	Lakewood Twp
15	15	Ocean	Lavallette Boro
15	16	Ocean	Little Egg Harbor
15	17	Ocean	Long Beach Twp
15	18	Ocean	Manchester Twp
15	19	Ocean	Mantoloking Boro
15	20	Ocean	Ocean Twp
15	21	Ocean	Ocean Gate Boro
15	22	Ocean	Pine Beach Boro
15	23	Ocean	Plumsted Twp
15	24	Ocean	Point Pleasant Boro
15	25	Ocean	Point P Beach Boro
15	26	Ocean	Seaside Heights Boro
15	27	Ocean	Seaside Park Boro
15	28	Ocean	Ship Bottom Boro
15	29	Ocean	South Toms River Boro
15	30	Ocean	Stafford Twp
15	31	Ocean	Surf City Boro
15	32	Ocean	Tuckerton Boro

15	33	Ocean	Barnegat Twp
16	01	Passaic	Bloomingdale Boro
16	02	Passaic	Clifton City
16	03	Passaic	Haledon Boro
16	04	Passaic	Hawthorne Boro
16	05	Passaic	Little Falls Twp
16	06	Passaic	North Haledon Boro
16	07	Passaic	Passaic City
16	08	Passaic	Paterson City
16	09	Passaic	Pompton Lakes Boro
16	10	Passaic	Prospect Park Boro
16	11	Passaic	Ringwood Boro
16	12	Passaic	Totowa Boro
16	13	Passaic	Wanaque Boro
16	14	Passaic	Wayne Twp
16	15	Passaic	West Milford Twp
16	16	Passaic	West Paterson Boro
17	01	Salem	Alloway Twp
17	02	Salem	Elmer Boro
17	03	Salem	Elsinboro Twp
17	04	Salem	Lower Alloways Creek
17	05	Salem	Mannington Twp
17	06	Salem	Oldmans Twp
17	07	Salem	Penns Grove Boro
17	08	Salem	Pennsville Twp
17	09	Salem	Pilesgrove Twp
17	10	Salem	Pittsgrove Twp
17	11	Salem	Quinton Twp
17	12	Salem	Salem City
17	13	Salem	Carneys Point Twp
17	14	Salem	Upper Pittsgrove Twp
17	15	Salem	Woodstown Boro
18	01	Somerset	Bedminster Twp
18	02	Somerset	Bernards Twp
18	03	Somerset	Bernardsville Boro
18	04	Somerset	Bound Brook Boro
18	05	Somerset	Branchburg Twp
18	06	Somerset	Bridgewater Twp
18	07	Somerset	Far Hills Boro
18	08	Somerset	Franklin Twp
18	09	Somerset	Green Brook Twp
18	10	Somerset	Hillsborough Twp
18	11	Somerset	Manville Boro
18	12	Somerset	Millstone Boro
18	13	Somerset	Montgomery Twp
18	14	Somerset	North Plainfield Boro
18	15	Somerset	Peapack-Gladstone
18	16	Somerset	Raritan Boro
18	17	Somerset	Rocky Hill Boro
18	18	Somerset	Somerville Boro
18	19	Somerset	So Bound Brook Boro
18	20	Somerset	Warren Twp
18	21	Somerset	Watchung Boro
19	01	Sussex	Andover Boro
19	02	Sussex	Andover Twp
19	03	Sussex	Branchville Boro
19	04	Sussex	Byram Twp
19	05	Sussex	Frankford Twp
19	06	Sussex	Franklin Boro
19	07	Sussex	Fredon Twp
19	08	Sussex	Green Twp
19	09	Sussex	Hamburg Boro
19	10	Sussex	Hampton Twp
19	11	Sussex	Hardyston Twp

Water Allocation Codes

19	12	Sussex	Hopatcong Boro
19	13	Sussex	Lafayette Twp
19	14	Sussex	Montague Twp
19	15	Sussex	Newton Town
19	16	Sussex	Ogdensburg Boro
19	17	Sussex	Sandyston Twp
19	18	Sussex	Sparta Twp
19	19	Sussex	Stanhope Boro
19	20	Sussex	Stillwater Twp
19	21	Sussex	Sussex Boro
19	22	Sussex	Vernon Twp
19	23	Sussex	Walpack Twp
19	24	Sussex	Wantage Twp
20	01	Union	Berkeley Heights Twp
20	02	Union	Clark Twp
20	03	Union	Cranford Twp
20	04	Union	Elizabeth City
20	05	Union	Fanwood Boro
20	06	Union	Garwood Boro
20	07	Union	Hillside Twp
20	08	Union	Kenilworth Boro
20	09	Union	Linden City
20	10	Union	Mountainside Boro
20	11	Union	New Providence Boro
20	12	Union	Plainfield City
20	13	Union	Rahway City
20	14	Union	Roselle Boro
20	15	Union	Roselle Park Boro
20	16	Union	Scotch Plains Twp
20	17	Union	Springfield Twp
20	18	Union	Summit City
20	19	Union	Union Twp
20	20	Union	Westfield Town
20	21	Union	Winfield Twp
21	01	Warren	Allamuchy Twp
21	02	Warren	Alpha Boro
21	03	Warren	Belvidere Town
21	04	Warren	Blairstown Twp
21	05	Warren	Franklin Twp
21	06	Warren	Frelinghuysen Twp
21	07	Warren	Greenwich Twp
21	08	Warren	Hackettstown Town
21	09	Warren	Hardwick Twp
21	10	Warren	Harmony Twp
21	11	Warren	Hope Twp
21	12	Warren	Independence Twp
21	13	Warren	Knowlton Twp
21	14	Warren	Liberty Twp
21	15	Warren	Lopatcong Twp
21	16	Warren	Mansfield Twp
21	17	Warren	Oxford Twp
21	19	Warren	Phillipsburg Town
21	20	Warren	Pohatcong Twp
21	21	Warren	Washington Boro
21	22	Warren	Washington Twp
21	23	Warren	White Twp

UNITS CODE	UNITS DESC
cm	Cubic feet per minute
ft	Feet
gh	gal/hr
gm	gal/min
in	inches
kx	kilometers
me	meters
mi	miles
BY	BGY (Billion Gallons per Year)
CM	cm (Centimetres)
GD	Gallons Per Day
MD	Million Gallons Per Day
MG	Million Gallons per minute
MM	Million Gallons Per Month
TD	Thousand Gallons Per Day
TM	Thousand Gallons per minute
WM	Million Gallons Per Year

HYDROGEOLOGIC UNIT CODE	HYDROGEOLOGIC UNIT DESC (The HYDROGEOLOGIC UNIT DESC is a concatenation of the map code and unit description)
30	non-glacial surficial material
40	gacu glacial aquifers and confining units
45	oc bedrock outcrop
79	undivided glacial deposits
110	ct or dt continous or discontinous till
116	m morainic deposits
120	l lake-bottom sediment
129	sg glacial sand and gravel
985	cpacu coastal plain aquifers and confining units
992	hb Holly Beach water-bearing zone
994	ec estuarine clay
996	es estuarine sand aquifer
999	cps coastal plain surficial aquifers
1448	cycu Cohansey confining unit
1449	cyac Cohansey aquifer
1451	kcas Kirkwood-Cohansey water-table aquifer system
1454	kac Atlantic City "800-foot" sand aquifer
1455	krg Rio Grande water-bearing zone
1456	ppa Piney Point aquifer
1465	wbcu Wildwood-Belleplain confining unit
1525	ccu composite confining unit
1805	vta Vincentown aquifer
2151	rbs Red Bank sand
2355	mlwa Mount Laurel-Wenonah aquifer
2475	mawcu Marshalltown-Wenonah confining unit
2505	eas Englishtown aquifer system
2525	mewcu Merchantville-Woodbury confining unit
2660	prma Potomac-Raritan-Magothy aquifer system
2662	prmau upper Potomac-Raritan-Magothy aquifer
2664	prmam middle Potomac-Raritan-Magothy aquifer
2666	prmal lower Potomac-Raritan-Magothy aquifer
2802	prmcu Potomac-Raritan-Magothy confining unit
2905	prmpcu Potomac confining unit
3025	Fractured-rock aquifers of the Newark basin part of the Piedmont Province
3050	ba Brunswick aquifer
3199	bs basalt

Water Allocation Codes

3799	db diabase
5110	lf Lockatong Formation
5405	sf Stockton Formation
6050	Fractured-rock aquifers of the Valley & Ridge Province, Highlands Province, and Trenton and Manhattan Prongs of the Piedmont Province
6125	gpkm rocks of the Green Pond Mountain Region, Kittatinny Mountain, and Minisink Valley
8199	mfjs Martinsburg Formation and Jutland klippe sequence
8399	jlkh Jacksonburg limestone, Kittatinny Supergroup and Hardyston quartzite
8999	imr igneous and metamorphic rocks

End Aquifer Codes

GEO FORMATION CODE	GEO FORMATION DESC (The GEO FORMATION DESC is concatenation of the NJGS Geo num, the geologic map code and the formation description)
10	100 Cz Cenozic Era
20	102 Q Quaternary System
30	104 Qh Holocence Series
40	106 Qp Pleistocene
50	1000 T Tertiary System
60	1002 Tpl Pliocene Series
70	1004 Tpm Pliocene-Miocene Series
80	1006 Tm Miocene Series
90	1008 To Oligocene Series
100	1010 Te Eocene Series
110	1012 Tpa Paleocene Series
120	2000 M Mesozoic Era
130	2100 K Cretaceous System
140	3000 JTr Jurassic & Triassic Systems
150	3100 J Jurassic System
160	5000 Tr Triassic System
170	6000 Pal Paleozoic Era
180	6100 D Devonian System
190	7000 DS Devonian and Silurian Systems
200	7100 S Silurian System
210	8000 O Ordovician System
220	8500 OCu Ordovician & Cambrian Systems, undivided
230	8700 C Cambrian System
240	9000 Pc Precambrian
250	9100 Pz Proterozoic Eon
260	9200 Zu late Proterozoic rocks, unifferentiated
270	9300 Yu Middle Proterozoic rocks, undifferentiated
280	50 ebo Extensive bedrock outcrop (suficial sediment generally absent)
290	60 sbo Scattered bedrock outcrop
300	30 * Recent sediment
310	25 af Artificial fill
320	160 Qs Swamp and marsh deposits
330	136 x Non-glacial material
340	170 Qal Alluvium
350	172 Qalb Alluvium and boulder lag
360	174 Qalfp Floodplain deposits
370	176 Qalc Channel deposits
380	180 Qac Alluvium and colluvium
390	190 Qmm Estuarine deposits
400	200 Qaf Alluvial-fan deposits
410	210 Qst Stream-terrace deposits
420	220 Qta Talus
430	221 Qtl Lower-terrace deposits
440	223 Qtu Upper-terrace deposits
450	225 Qrt Raritan-terrace deposits
460	227 Qtf Fluvial deposits (pre-Illinoian)
470	230 Qe Eolian deposits
471	235 Qes Eolian deposits - sheet sand
472	240 Qed Eolian deposits - sand dunes
480	800 Qc Colluvium
490	810 Qcg Gneiss colluvium
500	820 Qcb Basalt colluvium
510	830 Qcd Diabase colluvium
520	840 Qcs Slate colluvium
530	850 Qcc Conglomerate colluvium
540	860 Qcq Quartzite colluvium
550	870 Qcsg Sand and gravel colluvium
560	880 Qcsl Sand and silt colluvium
570	885 Qccb Carbonate colluvium
580	890 Qct Till colluvium
590	900 Qw Weathered bedrock
600	910 Qwg Weathered gneiss
610	920 Qwb Weathered basalt
620	930 Qwd Weathered diabase
630	940 Qws Weathered slate
640	950 Qwc Weathered conglomerate
650	960 Qwcb Weathered carbonate
660	962 Qwcp Weathered coastal plain formation
670	970 Qwq Weathered quartzite
680	980 Qwsc Weathered schist
690	40 * Glacial aquifers and confining units
700	110 t Till
710	300 Qt Till (Quaternary)
720	310 Qtw Till (late Wisconsinan)
730	312 Qtwr Rahway till (late Wisconsinan)
740	314 Qtwn Netcong till (late Wisconsinan)
750	316 Qtwk Kittatinny Mountain till (late Wisconsinan)
760	318 Qtwqc Till derived from quartzite and conglomerate (late Wisconsinan)
770	320 Qtwc Till derived from carbonate rock (late Wisconsinan)
780	322 Qtwg Till derived from gneiss (late Wisconsinan)
790	324 Qtwss Till derived from gray slate (late Wisconsinan)
800	326 Qtwrs Till derived from red shale (late Wisconsinan)
810	328 Qtwb Till derived from basalt and diabase (late Wisconsinan)
820	350 Qti Till (Illinoian)
830	352 Qtif Flanders till (Illinoian)

Water Allocation Codes

840	354 Qtib Bergen till (Illinoian)
850	370 Qtj Till (Jerseyan)
860	112 ct Continuous till
870	114 dt Discontinous till
880	305 Qtt Discontinuous till (generally less than 10 feet)
890	130 it Till (Illinoian age)
900	132 jt Till (Jerseyan age)
910	380 Qtl Tillstone lag
920	129 sg Sand and gravel
930	70 * Kames and kame terraces
931	71 Qk Kames
932	72 Qkt Kame terraces
940	77 * Outwash deposits
950	119 d Deltaic sediment
960	121 id Lacustrine-fan sediment (Illinoian age)
970	122 f Fluvial sediment
980	124 fl Fluvial over lacustrine sediment
990	126 if Fluvial sediment (Illinoian age)
1000	128 ic Ice-contact sediment
1010	134 js Sand and gravel (Jerseyan age)
1020	400 Qsd Stratified drift
1030	410 Qsdw Stratified drift (late Wisconsinan)
1040	450 Qsdi Stratified drift (Illinoian)
1050	500 Qsdj Stratified drift (Jerseyan)
1060	408 Qsdd Glaciolacustrine sand and gravel
1070	420 Qsdwd Glaciolacustrine sand and gravel (late Wisconsinan)
1080	460 Qsdid Glaciolacustrine sand and gravel (Illinoian)
1090	520 Qsdjd Glaciolacustrine sand and gravel (Jerseyan)
1100	406 Qsdde Glaciolacustrine deltaic deposits
1110	422 Qsdwde Deltaic deposits (late Wisconsinan)
1120	462 Qsdide Deltaic deposits (Illinoian)
1130	522 Qsdjde Deltaic deposits (Jerseyan)
1140	407 Qsdlf Lacustrine-fan deposits
1150	424 Qsdwlf Lacustrine-fan deposits (late Wisconsinan)
1160	464 Qsdilf Lacustrine-fan deposits (Illinoian)
1170	524 Qsdjlf Lacustrine-fan deposits (Jerseyan)
1180	409 Qsdf Glaciofluvial sand and gravel
1190	440 Qsdwf Glaciofluvial sand and gravel (late Wisconsinan)
1200	480 Qsdif Glaciofluvial sand and gravel (Illinoian)
1210	540 Qsdjf Glaciofluvial sand and gravel (Jerseyan)
1220	404 Qsdfv Valley-outwash deposits
1230	442 Qsdwfv Valley-outwash deposits (late Wisconsinan)
1240	482 Qsdifv Valley-outwash deposits (Illinoian)
1250	542 Qsdjfv Valley-outwash deposits (Jerseyan)
1260	403 Qsdft Meltwater-terrace deposits
1270	444 Qsdwft Meltwater-terrace deposits (late Wisconsinan)
1280	484 Qsdift Meltwater-terrace deposits (Illinoian)
1290	544 Qsdjft Meltwater-terrace deposits (Jerseyan)
1300	120 l Lake-bottom sediment
1310	400 Qsd Stratified drift

1320	410 Qsdw Stratified drift (late Wisconsinan)
1330	450 Qsdi Stratified drift (Illinoian)
1340	500 Qsdj Stratified drift (Jerseyan)
1350	402 Qsdlb Glaciolacustrine lake-bottom deposits
1360	430 Qsdwlb Glaciolacustrine lake-bottom deposits (late Wisconsinan)
1370	470 Qsdilb Glaciolacustrine lake-bottom deposits (Illinoian)
1380	530 Qsdjlb Glaciolacustrine lake-bottom deposits (Jerseyan)
1390	116 m Morainic deposits
1400	700 Qm Morainic deposits
1410	710 Qmw Moraines (late Wisconsinan)
1420	720 Qmi Moraines (Illinoian)
1430	118 im Morainic deposits (Illinoian age)
1440	79 * Glacial deposits, undivided
1450	80 * Glacial lake deposits
1470	405 Qgls Glaciolacustrine sediment
1480	600 Qic Ice-contact deposits
1490	982 njcp New Jersey Costal Plain Province
1500	999 * Surficial sediment (thicker than 50 feet overlying coastal plain aquifers and confining units)
1510	993 Qbs Beach sand
1520	1050 Tsg Sand and gravel near Cape May
1530	1090 Tpb Pensauken and Bridgeton Formations
1540	1100 Tp Pensauken Formation
1550	1200 Tb Bridgeton Formation
1560	1205 TQb Bridgeton Formation (arkosic phase)
1570	1210 TQbg Bridgeton Formation (glauconitic phase)
1580	1250 Tg Upland gravel
1590	1300 Tbh Beacon Hill Formation
1600	990 Qcm Cape May Formation
1610	993 Qbs Beach sand
1620	990 Qcm Cape May Formation
1630	1390 Tc Unnamed Formation at Cape May
1640	990 Qcm Cape May Formation
1650	1390 Tc Unnamed Formation at Cape May
1660	1400 Tch Cohansey Formation
1670	1400 Tch Cohansey Formation
1680	1400 Tch Cohansey Formation
1690	1450 Tck Cohansey & Kirkwood Formations
1700	1500 Tk Kirkwood Formation
1710	1460 Tkb Kirkwood Formation - Belleplain member
1720	1460 Tkb Kirkwood Formation - Belleplain member
1730	1470 Tkw Kirkwood Formation - Wildwood member
1740	1500 Tk Kirkwood Formation
1750	1454 Tkls Kirkwood Formation - lower member (sand facies)
1760	1500 Tk Kirkwood Formation
1770	1480 Tks Kirkwood Formation - Shiloh Marl member
1780	1505 Tkal Kirkwood Formation - Alloway Clay member
1790	1530 Tsp Sewell Point Formation
1800	1540 Tai Absecon Inlet Formation

Water Allocation Codes

1810	1459 Tkl Kirkwood Formation - lower member (silt and clay facies)
1820	1550 TKsrn Shark River Formation through Navesink Formations
1830	1600 Tsr Shark River Formation
1840	1700 Tmq Manasquan Formation
1850	1705 Tmqd Manasquan Formation - Deal member
1860	1690 Tmqvt Manasquan and Vincentown Formations
1870	1900 Tht Hornerstown Formation
1880	1790 Tvtht Vincentown and Hornerstown Formations
1890	2154 Krbsh Red Bank Formation - Sandy Hook member
1900	2200 Kt Tinton Formation
1910	2250 Kns Navesink Formation
1920	2260 Kc4 Kc4 cycle (subsurface equivalent of Red Bank and Navesink Formations)
1930	2460 Kc3 Kc3 cycle (subsurface equivalent of Marshalltown, Wenonoah, and Mount Laurel Formations)
1950	1605 Tsrtr Shark River Formation - Toms River member
1960	1452 Tac Atlantic City Formation
1970	1800 Tvt Vincentown Formation
1980	2150 Krb Red Bank Formation
1990	2152 Krbs Red Bank Formation - Shrewsbury member
2000	2260 Kc4 Kc4 cycle (subsurface equivalent of Red Bank and Navesink Formations)
2010	2300 Kml Mount Laurel Formation
2020	2350 Kmw Mount Laurel and Wenonah Formations
2030	2400 Kw Wenonah Formation
2040	2460 Kc3 Kc3 cycle (subsurface equivalent of Marshalltown, Wenonoah, and Mount Laurel Formations)
2050	2400 Kw Wenonah Formation
2060	2450 Kmt Marshalltown Formation
2070	2470 Kc2 Kc2 cycle
2080	2605 Kc1 Kc1 cycle (subsurface equivalent of Merchantville, Woodbury, and Englishtown Formations)
2090	2500 Ket Englishtown Formation
2100	2540 Kwbmv Woodbury and Merchantville Formations
2110	2530 Kwbmc Woodbury, Merchantville, and Cheesquake Formations
2120	2550 Kwb Woodbury Formation
2130	2600 Kmv Merchantville Formation
2140	2605 Kc1 Kc1 cycle (subsurface equivalent of Merchantville, Woodbury, and Englishtown Formations)
2150	2610 Kcq Cheesequake Formation
2160	2704 Kmcb Magothy Formation - Cliffwood beds
2170	2706 Kmmb Magothy Formation - Morgan beds
2180	2710 Kmas Magothy Formation - Amboy Stoneware Clay member
2190	2650 Kmrp Magothy, Raritan, and Potomac Formations
2200	2700 Kmg Magothy Formation
2210	2720 Kmob Magothy Formation - Old Bridge Sand member

2220	2740 Kmss Magothy Formation - Sayerville Sand member
2230	2730 Kmsa Magothy Formation - South Amboy Fire Clay member
2240	2810 Krwc Raritan Formation - Woodbridge Clay member
2250	2815 Krbr Raritan Formation - Bass River Formation
2260	2800 Kr Raritan Formation
2270	2820 Krfs Raritan Formation - Farrington Sand member
2280	2900 Kp Potomac Formation
2290	2900 Kp Potomac Formation
2300	2901 Kp3 Potomac Formation, Unit 3 (upper subsurface)
2310	2902 Kp2 Potomac Formation, Unit 2 (middle subsurface)
2320	2903 Kp1 Potomac Formation, Unit 1 (lower subsurface)
2330	2997 njp New Jersey Piedmont Province
2340	3010 JTrns Newark Supergroup
2350	3200 Jbs Basalt
2360	3300 Jh Hook Mountain basalt
2370	3500 Jp Preakness basalt
2380	3550 Jps Preakness sandstone (between basalt flows)
2385	3555 Jpg Preakness gabbroid
2390	3700 Jo Orange Mountain basalt
2400	3800 Jd Diabase and granophyre [polygon label]
2410	3801 Jd Diabase dike [line label]
2420	3850 Jg Granophyre
2430	3030 JTrbg Brunswick Group (Passaic Formation through Boonton Formation)
2440	3070 Trb Brunswick Formation (superceded by Passaic, Feltville, Towaco, and Boonton Formations)
2450	2830 Krfc Raritan Formation - Raritan Fire Clay member
2460	3110 Jb Boonton Formation
2470	3400 Jt Towaco Formation
2480	3600 Jf Feltville Formation
2490	4000 JTrp Passaic Formation
2500	4100 Trpg Passaic Formation - gray bed [includes JTrpg labels on some maps]
2510	4150 Trpgh Passaic Formation - gray-bed hornfels [includes JTrpgh labels on some maps]
2520	4200 JTrph Passaic Formation - hornfels
2530	4500 JTrps Passaic Formation - sandstone
2540	4505 JTrpst Passaic Formation - siltstone and mudstone
2550	4510 JTrpms Passaic Formation - sandy mudstone
2560	4509 JTrpm Passaic Formation - mudstone
2570	3120 Jbc Boonton Formation - basalt-clast conglomerate
2580	3130 Jbcg Boonton Formation - gneiss-clast conglomerate
2590	3140 Jbcq Boonton Formation - quartzite-clast conglomerate
2600	3450 Jtc Towaco Formation - conglomerate
2610	3650 Jfc Feltville Formation - conglomerate
2620	3900 JTrc Conglomerate
2630	3925 JTrcpc Cobble and pebble conglomerate

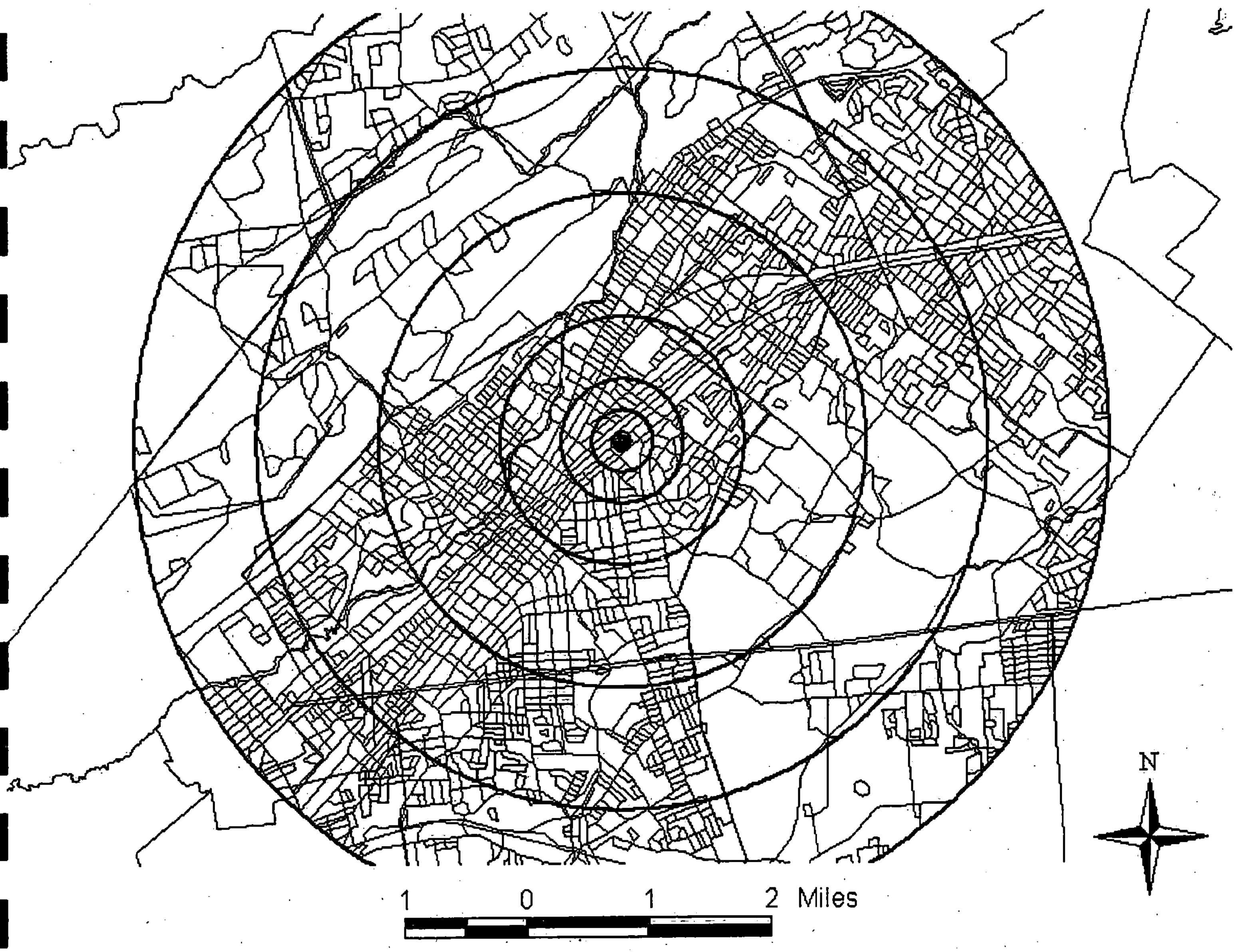
Water Allocation Codes

2640	3950 JTrcq Quartzite-clast conglomerate
2650	3960 JTrcsh Shale-clast conglomerate
2660	3970 JTrcl Limestone-clast conglomerate
2670	4250 JTrpcq Passaic Formation - quartzite-clast conglomerate
2680	4300 JTrpcl Passaic Formation - limestone-clast conglomerate
2690	4350 JTrpcsh Passaic Formation - shale-clast conglomerate
2700	4400 JTrpsc Passaic Formation - conglomeratic sandstone
2710	4450 JTrpsp Passaic Formation - conglomerate and pebbly-sandstone
2720	5100 Trl Lockatong Formation
2730	5150 Trlr Lockatong Formation - red bed
2740	5200 Trlh Lockatong Formation - hornfel
2750	5250 Trla Lockatong Formation - arkosic-sandstone
2760	5300 Trls Lockatong Formation - sandstone
2770	5305 Trlc Lockatong Formation - conglomerate
2780	5310 Trlscq Lockatong Formation - quartz-cobble conglomerate
2790	5350 Trlsc Lockatong Formation - sandstone and conglomerate
2800	5400 Trs Stockton Formation
2810	5425 Trsc Stockton Formation - conglomerate
2820	5450 Trss Stockton Formation - cobble conglomerate and sandstone [includes Trssc labels on some maps]
2830	5500 Trscq Stockton Formation - quartz-cobble conglomerate
2840	6025 njvr New Jersey Valley and Ridge Province
2850	6125 * Green Pond Mountain Region, Kittatinny Mountain, and Minisink Valley
2860	6130 gp Green Pond Mountain Region part of the New Jersey Highlands
2870	6150 Dsk Skunnemunk conglomerate
2880	6200 Dbv Bellvale sandstone
2890	6250 Dcw Cornwall shale
2900	6300 Dm Marcellus shale
2910	6350 Db Buttermilk Falls and Onondaga limestones, undivided
2920	6360 Don Onondaga limestone
2930	6400 Dkec Kanouse sandstone, Esopus Formation, and Connelly conglomerate, undivided
2940	6450 Dkn Kanouse sandstone
2950	6500 Ds Schoharie Formation
2960	6550 De Esopus Formation
2970	6600 Dcc Connelly conglomerate
2980	6650 Do Oriskany Group, undivided
2990	6720 Drs Ridgely sandstone
3000	6740 Dsc Shriver chert
3010	6760 Dg Glenarie Formation
3020	6800 Dh Helderberg Group, undivided
3030	6820 Dp Port Ewen shale
3040	6840 Dmn Minisink limestone and New Scotland Formation, unidvided
3050	6860 Dmi Minisink limestone
3060	6880 Dn New Scotland Formation
3070	6881 Dnm New Scotland Formation - Maskenozha member
3080	6882 Dnf New Scotland Formation - Flatbrookville member
3090	6900 Dkc Kalberg Limestone, Coeymans limestone, Manlius limestone, and Coeymans Formation, undivided
3100	6885 Dc Coeymans Formation
3110	6901 Dcs Coeymans Formation - Stormville member
3120	6902 Dcsi Coeymans Formation - Shawnee Island member
3130	6903 Dcpv Coeymans Formation - Peters Valley member
3140	6904 Dcdl Coeymans Formation - Depue Limestone member
3150	6920 Dkl Kalkberg limestone
3160	6940 Dcl Coeymans limestone
3170	6960 Dml Manlius limestone
3180	6961 Dmlr Manlius limestone - Ravena member
3190	6962 Dmlt Manlius limestone - Thacker member
3200	7150 DSr Rondout Formation
3210	7151 DSrm Rondout Formation - Mashipacong member
3220	7152 DSrd Rondout Formation - Duttonville member
3230	7153 DSrwd Rondout Formation - Whiteport Dolomite member
3240	7200 DSrd Rondout and Decker Formations, undivided
3250	7250 Sd Decker Formation
3260	7300 Sbv Bossardville limestone
3270	7400 Sbvy Berkshire Valley Formation
3280	7500 Sp Poxono Island Formation
3290	7550 Sbp Berkshire Valley and Poxono Island Formations, undivided [includes Spbv labels on some maps]
3300	7600 Sb Bloomsburg red beds
3310	7700 Sl Longwood shale
3320	7705 Shf High Falls Formation (Superceded by the Longwood shale and Bloomsbury red beds)
3330	7800 Sg Green Pond conglomerate [includes Sgp labels on some maps]
3340	7900 Ss Shawangunk Formation
3350	8100 SObu Beemerville Intrusive Suite
3360	8120 SObs Nepheline syenite [includes Obs labels on some maps]
3370	8140 SObl Lamprophyre, tinguaite, bostonite, and malgnite, undifferentiated [includes Obt, Obp, Obb,Obn, Obl labels on some maps]
3380	8160 SObb Ouachitite breccia or volcanic breccia [includes Obo, Ovb, Oub, labels on some maps]
3390	8200 Om Martinsburg Formation, undivided
3400	8210 Omh Martinsburg Formation - High Point member [includes Omhp labels on some maps]
3405	8215 Omhs Martinsburg Formation - High Point member, sandstone facies
3410	8220 Omhph Martinsburg Formation - High Point member, hornfel
3420	8230 Omr Martinsburg Formation - Ramseyburg member
3425	8235 Ombr Martinsburg Formation - slate and graywacke facies
3430	8240 Omrh Martinsburg Formation - Ramseyburg member, hornfel
3440	8250 Omb Martinsburg Formation - Bushkill member
3450	8260 Ombh Martinsburg Formation - Bushkill member, hornfel

Water Allocation Codes

3460	8300 OCjt Jutland klippe sequence, undifferentiated [includes Ojt labels on some maps]
3470	8320 OCjtb Jutland klippe sequence, Unit B of Perissoratis and other (1979) [includes Ojtb labels on some maps]
3480	8340 OCjta Jutland klippe sequence, Unit A of Perissoratis and other (1979) [includes Ojta labels on some maps]
3490	8400 Oj Jacksonburg limestone
3500	8410 Oju Jacksonburg limestone, undivided
3510	8420 Ojr Jacksonburg limestone, cement rock facies
3520	8440 Ojl Jacksonburg limestone, cement limestone facies
3530	8450 Ojw Jacksonburg Limestone and sequence at Wantage
3540	8460 Ow Sequence at Wantage
3550	8490 Oj+ All Paleozoic units above Beekmantown Group, undivided
3560	8550 OCjk Jacksonburg limestone and Kittatinny Supergroup, undivided
3570	8575 OCjwb Jacksonburg limestone, sequence at Wantage, and Beekmantown Group, undivided
3580	8600 OCk Kittatinny Supergroup
3590	8602 Ocku Upper Kittatinny
3600	8604 Ockm Middle Kittatinny
3610	8606 Ockl Lower Kittatinny
3620	8610 Ob Beekmantown Group, undivided
3630	8620 Obu Beekmantown Group, upper part
3640	8630 Obl Beekmantown Group, lower part
3650	8640 Oo Ontelaunee Formation
3660	8642 Ooh Ontelaunee Formation - Harmonyvale member
3670	8644 Oobr Ontelaunee Formation - Beaver Run member
3680	8650 Oe Epler Formation
3690	8652 Oel Epler Formation - Lafayette member
3700	8654 Oebs Epler Formation - Big Springs member
3710	8656 Oebr Epler Formation - Branchville member
3720	8660 Or Rickenback dolomite
3730	8662 Orh Rickenback dolomite - Hope member
3740	8664 Orl Rickenback dolomite - lower member
3750	8670 Os Stonehenge Formation
3760	8750 OCa Allentown dolomite
3770	8752 OCau Allentown dolomite - upper member
3780	8754 OCal Allentown dolomite - Limeport member
3790	8800 Cl Leithsville Formation
3800	8820 Clw Leithsville Formation - Walkill member
3810	8840 Clha Leithsville Formation - Hamburg member
3820	8860 Clc Leithsville Formation - Califon member
3830	8900 Clh Leithsville Formation and Hardyston quartzite, undivided
3840	8920 Ch Hardyston quartzite
3850	8930 Cc Chickies quartzite
3860	8999 * Igneous and metamorphic rocks
3870	9970 Yg Gneiss, granofels, and migmatite
3880	9210 * Schistose rocks
3890	9220 CZm Manhattan schist
3900	9240 CZs Serpentinite
3910	9250 CZw Wissahickon Formation
3920	9260 Zch Chestnut Hill Formation
3930	9340 * Granitic rocks
3940	9270 db Diabase dikes (unknown age)
3950	9280 Zd Diabase dikes
3960	9290 Zv Metabasalt (includes Metavolcanic rocks)
3970	9350 Ygm Mount Eve granite
3980	9400 Ybi Byram Intrusive Suite
3990	9420 Ybh Hornblende granite
4000	9440 Ybs Hornblende syenite
4010	9460 Ybb Biotite granite
4020	9480 Yba Microperthite alaskite
4030	9500 Ylh Lake Hopatcong Intrusive Suite
4040	9520 Ypg Pyroxene granite
4050	9540 Yps Pyroxene syenite
4060	9560 Ypa Pyroxene alaskite
4070	9800 Yl Losee Metamorphic Suite
4080	9840 Yla Albite-oligoclase granite
4090	9900 Yd Diorite
4100	9960 Yma Microantiperthite alaskite
4110	9980 Ygb Gabbro
4120	9875 Yun Rocks of uncertain origin
4130	9590 * Gneissic rocks
4140	9595 bg Baltimore gneiss [not present in New Jersey]
4150	9600 Ys Syenite gneiss
4160	9700 Yms Metasedimentary rocks
4170	9710 Yk Potassic-feldspar gneiss
4180	9720 Ym Microcline gneiss
4190	9730 Yb Biotite-quartz-feldspar gneiss
4200	9740 Ymh Hornblende-quartz-feldspar gneiss
4210	9750 Ymp Clinopyroxene-quartz-feldspar gneiss
4220	9760 Yp Pyroxene gneiss
4230	9762 Ypb Pyroxene gneiss with abundant biotite
4240	9764 Yph Pyroxene gneiss with abundant hornblende
4250	9766 Ypbh Pyroxene gneiss with abundant biotite and hornblende
4260	9770 Ype Pyroxene-epidote gneiss
4270	9790 Yq Quartzite
4280	9795 Ye Epidote gneiss
4290	9820 Ylo Quartz-oligoclase gneiss
4300	9860 Ylb Biotite-quartz-oligoclase gneiss
4310	9870 Ylh Hornblende-quartz-oligoclase gneiss
4320	9880 Yh Hypersthene-quartz-plagioclase gneiss
4330	9910 Ya Amphibolite
4340	9920 Yam Migmatite
4350	9930 Ymg Monazite gneiss
4360	9940 Yhp Hornblende-plagioclase gneiss
4370	9950 Ybp Biotite-plagioclase gneiss
4380	9780 Yf Franklin marble [includes Ymr labels on some maps]
4390	9785 Yfl Franklin limestone
4400	9788 Ywl Wildcat marble

MAP 10
NJDEP GIS Population Map
Stop and Wash, 904-906 South Avenue
Plainfield City, Union County
Lat: 40° 37' 35.00" , Long: -74° 24' 20.00"



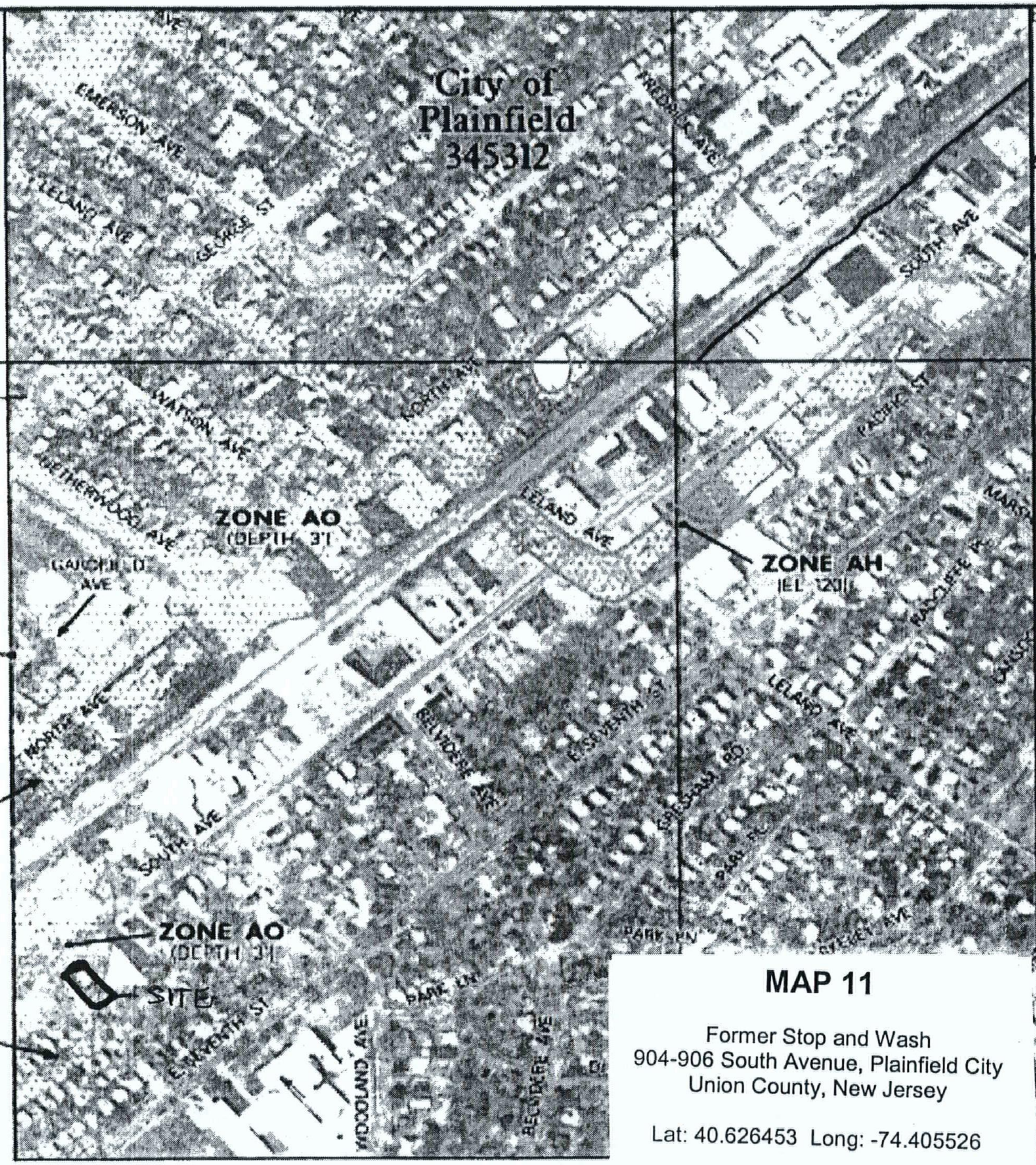
Ring	1	(0.00- 0.25)	has Population:	1231
Ring	2	(0.25- 0.50)	has Population:	4828
Ring	3	(0.50- 1.00)	has Population:	17600
Ring	4	(1.00- 2.00)	has Population:	44502
Ring	5	(2.00- 3.00)	has Population:	51701
Ring	6	(3.00- 4.00)	has Population:	61798

*Based on 2000 Census Data.

onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET



MAP 11

Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey

Lat: 40.626453 Long: -74.405526

FLOOD INSURANCE MAP
September 20, 2006

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0029F

FIRM
FLOOD INSURANCE RATE MAP
UNION COUNTY,
NEW JERSEY
(ALL JURISDICTIONS)

PANEL 29 OF 49

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FANWOOD, BOROUGH OF	[illegible]	0029	F
PLAINFIELD, CITY OF	[illegible]	0029	F
SCOTCH PLAINS, TOWNSHIP OF	[illegible]	0029	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
34039C0029F

EFFECTIVE DATE
SEPTEMBER 20, 2006

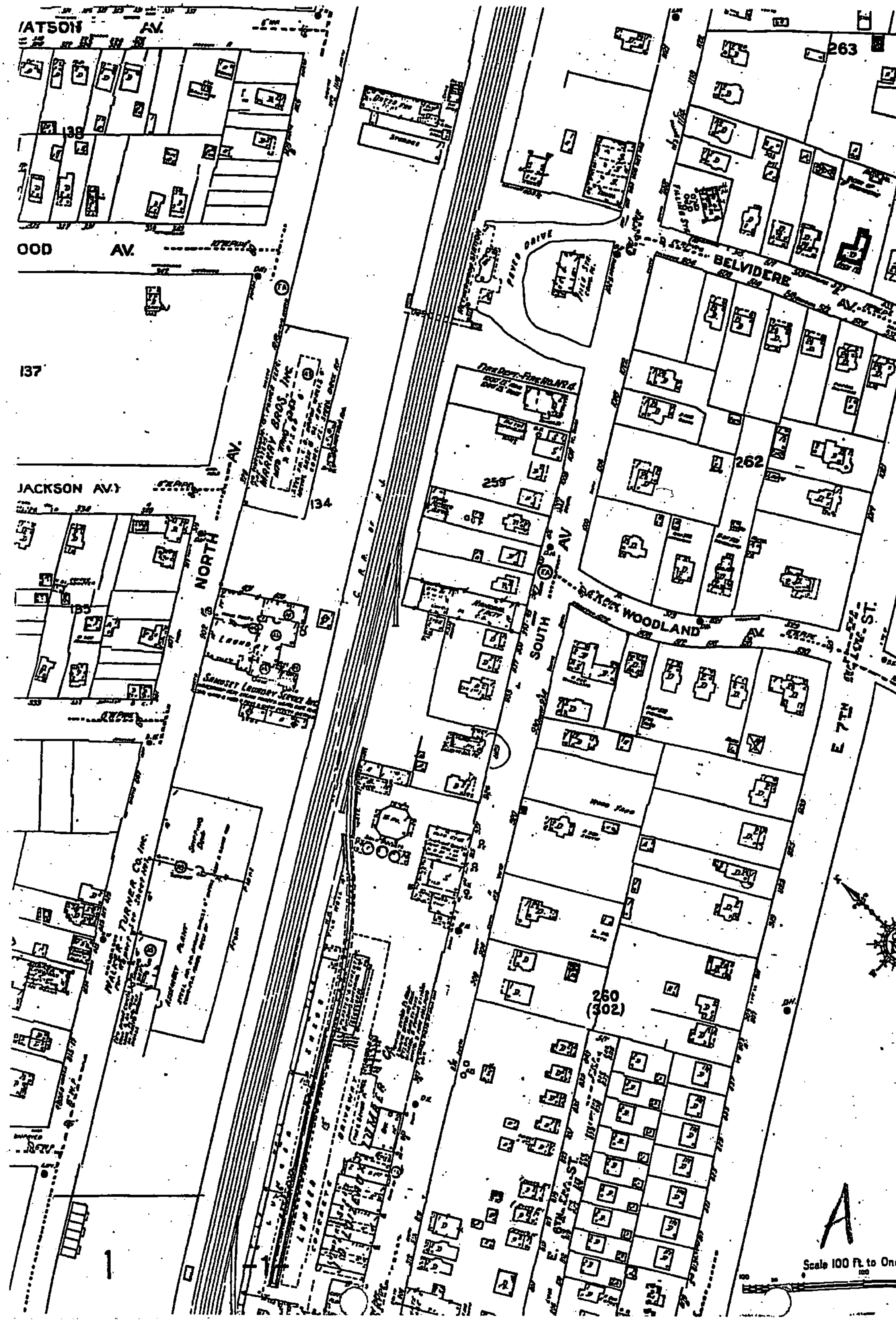
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov


N
Site Boundary
MAP 12
Former Stop and Wash
904-906 South Avenue, Plainfield City
Union County, New Jersey
Lat: 40.626453 Long: -74.405526
NJDEP Well Head Protection Area Map
(aerial imagery (c) NJDEP, 2002)
0
500
1,000
2,000 Feet

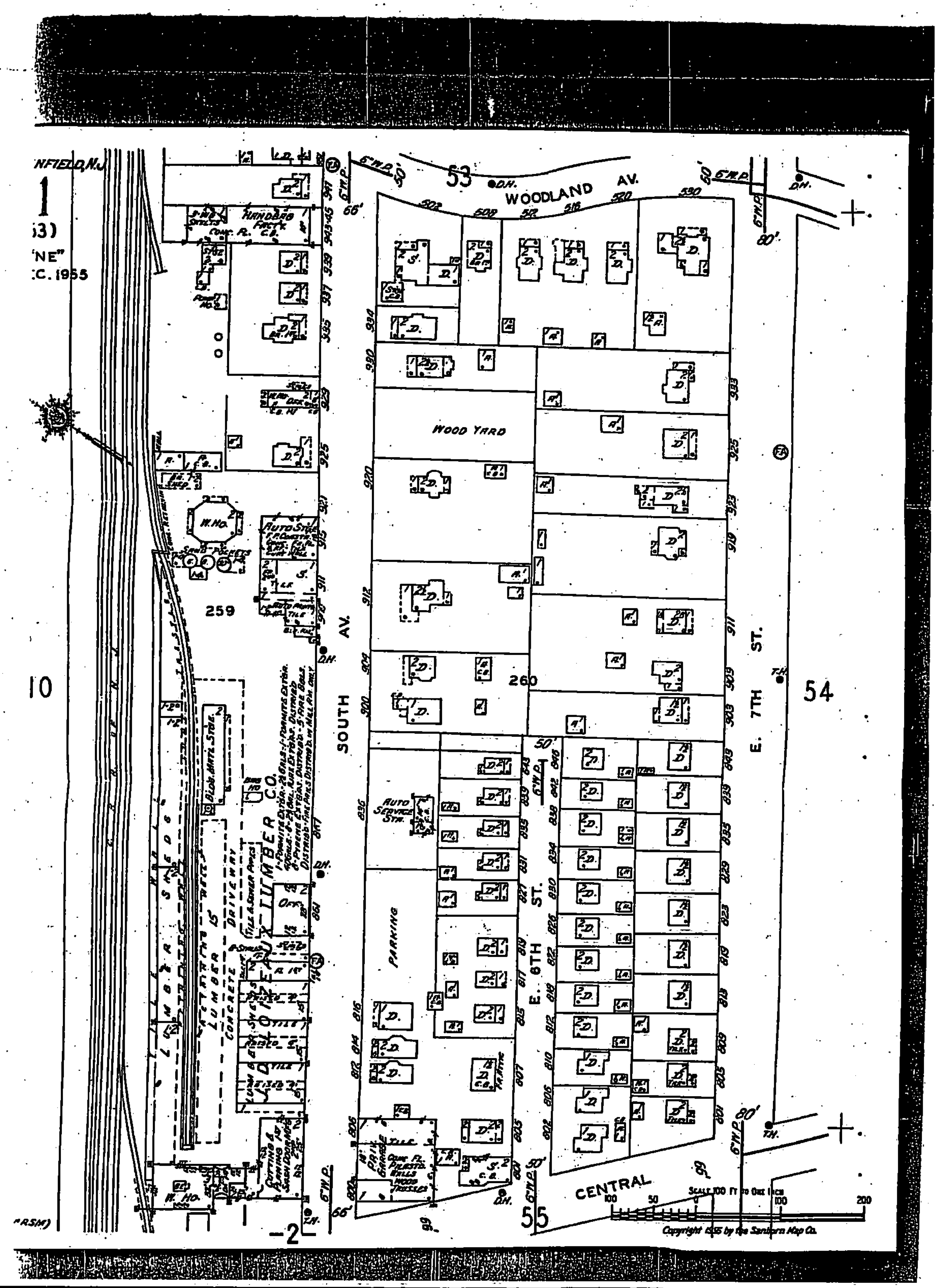
ATTACHMENT A

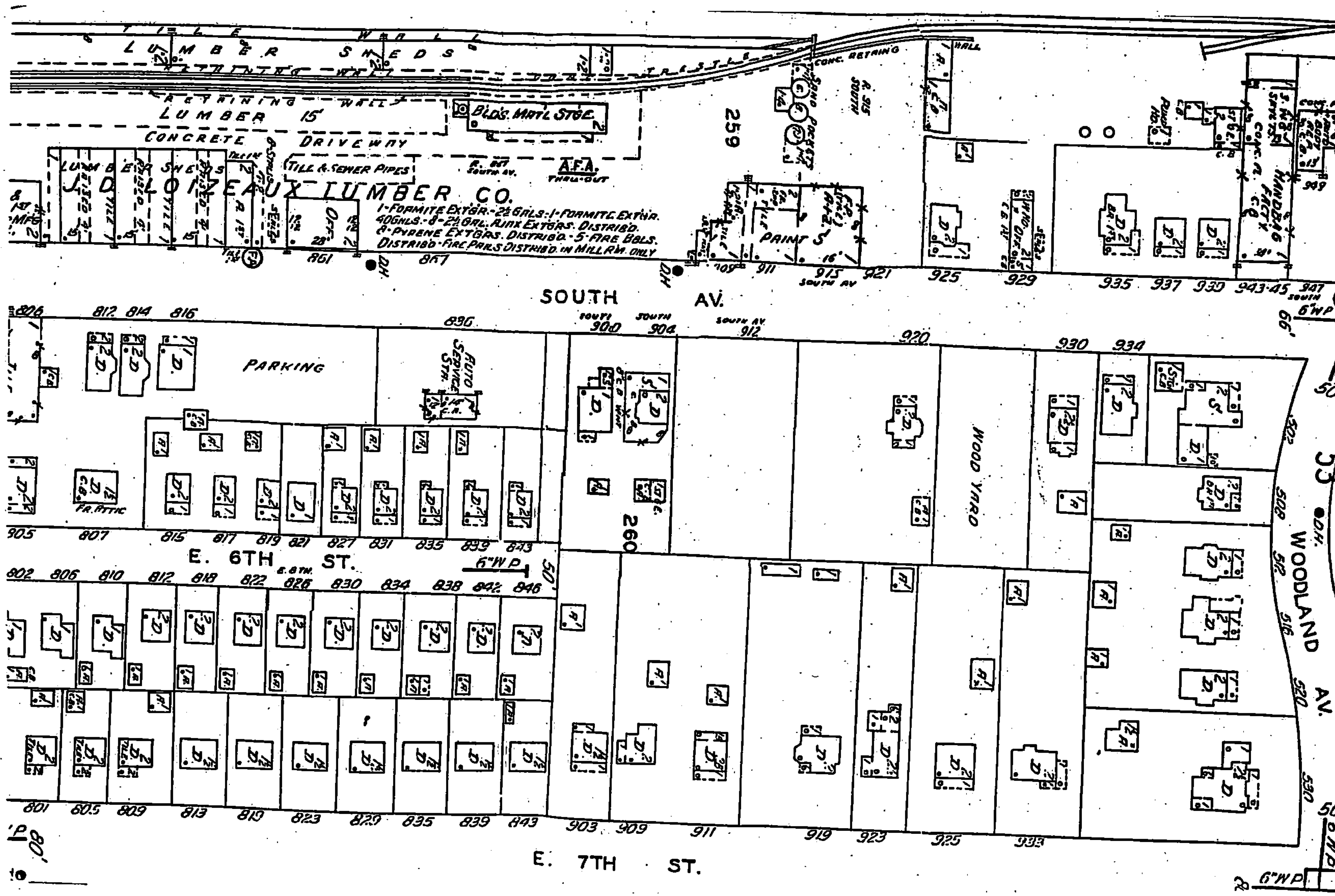
1951



ATSON AV.
OOD AV.
137
138
JACKSON AV.
NORTH AV.
134
135
259
SOUTH AV.
BELVIDERE AV.
WOODLAND AV.
E 7TH ST.
263
262
260
(302)
PAVED DRIVE
A
1
Scale 100 Ft. to On

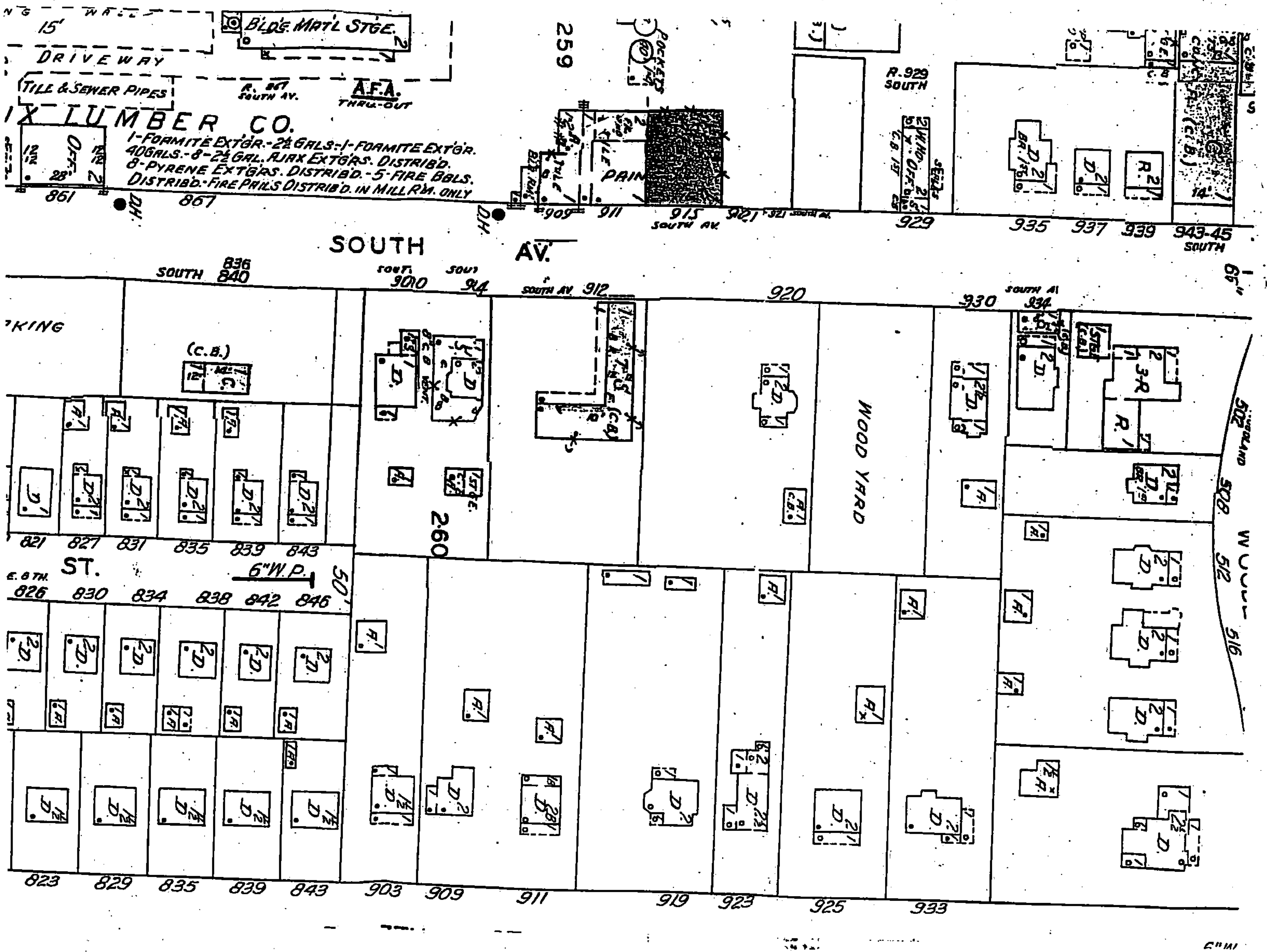
1956


NFIELD, N.J.
1
53)
"NE"
C. 1955
53
WOODLAND AV.
54
55
10
259
260
2
SOUTH AV.
E. 6TH ST.
E. 7TH ST.
CENTRAL
WOOD YARD
PARKING
AUTO SERVICE STA.
W. HO.
LUMBER CO.
CONCRETE
DRIVEWAY
SCALE 100 FT TO ONE INCH
Copyright 1955 by the Sanborn Map Co.


LUMBER SHEDS
RETAINING WALL
LUMBER 15'
CONCRETE DRIVEWAY
BLD'G. MAT'L STGE.
TILE & SEWER PIPES
A.F.A. THRU-OUT
J. D. LOIZEAUX LUMBER CO.
1-FOAMITE EXTGR.-2½ GALS. 1-FOAMITE EXTGR. 40 GALS. 8-2½ GAL. AINX EXTGRS. DISTRIB'D. 8-PYRENE EXTGRS. DISTRIB'D. 5-FIRE BBLS. DISTRIB'D. FIRE PAILS DISTRIB'D. IN MILL RM. ONLY
PAINT S.
259
260
SOUTH AV.
PARKING
AUTO SERVICE STA.
WOOD YARD
E. 6TH ST.
E. 7TH ST.
WOODLAND AV.
6" W.P.
53

-3-

1963



BLDG. MAT'L STGE.
DRIVEWAY
TILE & SEWER PIPES
A.F.A. THRU-OUT
R. 867 SOUTH AV.
X LUMBER CO.
1-FORMITE EXTGR.-2½ GALS.-1-FORMITE EXTGR. 40 GALS.-8-2½ GAL. AJAX EXTGRS. DISTRIB'D. 8-PYRENE EXTGRS. DISTRIB'D.-5-FIRE BBLS. DISTRIB'D.-FIRE PAILS DISTRIB'D. IN MILL RM. ONLY
259
260
R. 929 SOUTH
SOUTH AV.
WOOD YARD
ST.
6" W.P.
861
867
909
911
915
921
929
935
937
939
943-45
836
840
910
914
912
920
930
934
821
827
831
835
839
843
826
830
834
838
842
846
823
829
835
839
843
903
909
911
919
923
925
933
508
512
516

-4-

1982

ATTACHMENT B

STATE OF NEW JERSEY,
COUNTY OF SOMERSET } ss.:

*The undersigned hereby certif*ies

THAT RUTHEN LAUNDROMATS, INC., a New Jersey corporation

conducting a business under the following name style, or designation, viz.:

STOP AND WASH

at No. 906 South Avenue ~~*Street or Avenue*~~, *in the* City *of* Plainfield *in the County of* Union *and State of New Jersey.*
That the nature of the business is that of an automatic laundromat and automatic dry-cleaning

and the true, real, or full name or names, post office address and residences of all persons interested or members of such firm, partnership or business is as follows, viz.:—

Names	*P. O. Address*	*Residence*
Henry Kanar	335 Woodland Ave. Plainfield, N. J.	#335 Woodland Ave. Plainfield, N.J.
Ruth B. Kanar	335 Woodland Ave. Plainfield, N.J.	#335 Woodland Ave. Plainfield, N. J.

Signed in the Presence of

Adeline F. Hemming
Adeline F. Hemming

WITNESS: their *hand* s*this* 8th *day of* January *A. D. 19* 62.

RUTHEN LAUNDROMATS, INC.

By Henry Kanar
Henry Kanar, President

By Ruth B. Kanar
Ruth B. Kanar, Secretary

STATE OF NEW JERSEY,
COUNTY OF SOMERSET } ss.:

The undersigned being duly sworn according to law on their *oath* s *depose and say that* they are the *person* s *named in the foregoing certificate and that the statements contained therein are true.*

Sworn and subscribed to this 8th *day of* January *A. D. 19* 62 *before me at* North Plainfield, N.J.

Adeline F. Hemming

Henry Kanar L.S.
Henry Kanar

Ruth B. Kanar L.S.
Ruth B. Kanar

B

Business Name Certificate

of

RUTHEN LAUNDROMATS, INC.,
a New Jersey corporation

Dated January 10, , *19* 62

Law Offices
FREDERICK A. ONORE
266 Somerset St.,
North Plainfield, N.J.

ATTACHMENT C

PHONE (732) 679-5230
(973) 670-9300

Est. 1929

N.J. D.E.P. 6396
N.Y.D.E.C. JA017

MANIFEST #

LOEFFEL'S

WASTE OIL SERVICE
P.O. BOX 651 Old Bridge, N.J. 08857

Date May 15 07

Rufus 906 - 904 South Ave. Plfd

REMOVED ☐ —

3 Tanks Gallons of waste oil at — per gallon.

JF
INITIAL

5-16-2007

C

6/18/07

BUILDING SUBCODE TECHNICAL SECTION

NEW JERSEY UNIFORM CONSTRUCTION CODE

Date Received 33647
Date Issued
Control #
Permit # 2007-0761

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 621 Lot 2

Work Site Location 906-04 South AVE PLAINFIELd NJ. 07063

Owner in Fee GARLAND Webb MARSHA Webb

Address 474 SHEARER AVE UNION NJ. 07083

Tele. ( )

Contractor A+L HomeImprovement

Address 1114 Myrtle Ave PLAINFIELD NJ. 07063

Tele. (908) 769-8481 Fax (908) 769-9483

Lic. No. or Bldrs. Reg. No. 13VH00124900

Federal Emp. No. 22-341-8240

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

Signature Rufus Thomas

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK

Demolition House.

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	Initial
[✓] No Plans Required	6/18/07	
[ ] All		
[ ] Footing		
[ ] Foundation		
[ ] Frame		
[ ] Other		

Joint Plan Review Required:
[ ] Elec. [ ] Plumb. [ ] Fire [ ] Elevator

SUBCODE APPROVAL
[ ] CO [ ] CCO [ ] CA
Date:
Approved by:

INSPECTIONS — Dates (Month/Day)

Type:	Failure	Failure	Approval	Initial
Footing				
Foundation				
Slab				
Frame				
Barrier-Free				
Insulation				
Finishes				
Energy				
Mechanical				
TCO				
Other				
Final				
Barrier-Free				

TYPE OF WORK:
[ ] New Building
[ ] Addition
[ ] Alteration
 [ ] Roofing
 [ ] Siding
 [ ] Fence ______ Height (exceeds 6')
 [ ] Sign ______ Sq. Ft.
 [ ] Pool
 [ ] Asbestos Abatement Subchapter 8
 [ ] Lead Haz. Abatement NJAC 5:17
 [ ] Other ______
[X] Demolition

FEE (Office Use Only)
$

Administrative Surcharge $
Minimum Fee $
DCA Training Fee $
TOTAL FEE $

B. BUILDING CHARACTERISTICS

Use Group Present ______ Proposed ______
Constr. Class Present ______ Proposed ______
No. of Stories ______
Height of Structure ______ Ft.
Area — Largest Floor ______ Sq. Ft.
New Bldg. Area/All Floors ______ Sq. Ft.
Volume of New Structure ______ Cu. Ft.
Total Land Area Disturbed ______ Sq. Ft.

Est. Cost of Bldg. Work:
1. New Bldg. $
2. Alteration $
3. Total (1+2) $ 19,000

U.C.C. F110 (rev. 3/98)

1 White = Inspector Copy 2 Canary = Office Copy
3 Pink = Office Copy 4 Gold = Applicant Copy

33790 6/18/07

NEW JERSEY UNIFORM CONSTRUCTION CODE

BUILDING SUBCODE
TECHNICAL SECTION

Date Received Control # 33790

Date Issued Permit # 2007-0761

A. IDENTIFICATION–APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block ______ Lot ______ Qualification Code ______

Work Site Location 906 SOUTH AV
PLAINFIELD N.J.

Owner in Fee: ______

Tel. ( ) ______ e-mail ______

Address ______ (street, municipality, zip code)

Contractor: DRINA CONSTRUCTION Tel. (973) 3056833

Address 22 TROY LN e-mail LINCOLN PARK

Contractor License No. or Builder Registration No. 00422 Exp. Date 07-31-07

Federal Employee No. 22-2999362 FAX: (973) 505 1780

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	Initial
[✓] No Plans Required	6/19/07	[illegible]
[ ] All		
[ ] Footing		
[ ] Foundation		
[ ] Frame		
[ ] Other		

Joint Plan Review Required:
[ ] Elec. [ ] Plumb. [ ] Fire [ ] Elevator

SUBCODE APPROVAL
[ ] CO [ ] CCO [ ] CA
Date: ______
Approved by: ______

INSPECTIONS Type:	Failure	Failure	Approval	Initial
Footing				
Footing Bonding				
Foundation				
Slab				
Frame				
Truss Sys./Bracing				
Barrier-Free				
Insulation				
Finishes -Base Layer				
Finishes -Final				
Energy				
Mechanical				
TCO				
Other				
Final				
Barrier-Free				

(Dates (Month/Day))

B. BUILDING CHARACTERISTICS

Use Group Present ______ Proposed ______
Constr. Class Present ______ Proposed ______
No. of Stories ______
Height of Structure ______ Ft.
Area – Largest Floor ______ Sq. Ft.
New Bldg. Area/All Floors ______ Sq. Ft.
Volume of New Structure ______ Cu. Ft.
Total Land Area Disturbed ______ Sq. Ft.

Est. Cost of Bldg. Work:
1. New Bldg. $ 3,000
2. Rehabilitation $ ______
3. Total (1+ 2) $ ______

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

[signature]
Signature

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK GROUND FLOOR REMOVAL OF 9X9 VAT AND PIPE AND BOILER DEBRIS IN BASAMENT

TYPE OF WORK:
[ ] New Building
[ ] Addition
[ ] Rehabilitation
[ ] Roofing
[ ] Siding
[ ] Fence ______ Height (exceeds 6')
[ ] Sign ______ Sq. Ft.
[ ] Pool
[X] Asbestos Abatement Subchapter 8
[ ] Lead Haz. Abatement NJAC 5:17
[ ] Other ______
[ ] Demolition

FEE (Office Use Only)
$ ______

Administrative Surcharge $ ______
Minimum Fee $ ______
State Permit Surcharge Fee $ ______
TOTAL FEE $ ______

1 White = Inspector Copy 2 Canary = Office Copy
3 Pink = Office Copy 4 Gold = Applicant Copy

U.C.C. F110
(rev. 05/05)

Reorder from OCS Printing (609) 398-4375

BUILDING DE[...]ENT
PERMIT RECORD

904-06 SOUTH AVE 2SF&CB 1A
BLOCK 237 LOT 2 4A

Block 237 621
Lot 2 2

Mo.	Da.	Yr.	Owner	Construction		Builder	Permit No.	Plan No.
5	12	26	James Kanary	Frame Alter.	$160	Chas L Force	13361	13361
5	21	26	James Kanary	OHB Garage	$1400	Chas L Force	13394	13394
5	18	32	G. W. Bennett	Frame Alters.	$ 100.00	Owner	18328 ✓	
10	13	59	Helmor Inc.	Fr. Alters. & C.H.B. Addit.	$6000.00	Van Brothers	38399	38399
			convert to 2 fam. & erect store.					
7	19	61	Helmor Inc.	Fr. Alters.	$4,000.	Van Const. Co.	39337	
3	25	65	Dari-Matic, Inc.	Milk Vending Machine	$500.	Owner	40867	
3	30	67	Helmor Realty	Masonry Addition	$2500.	Owner	41809	41809
			In accord w/resol.of Bd.of Adj., 2/15/67 & Com.Council,3/6/67 with conditions.					
5	14	71	Helmor Realty	Ord. Repairs	$327.00	Vickers Roofing	43557	
8	1	77	1st Nat.Band of CJ	Re-roof	950.	Owner	47152	

CITY OF PLAINFIELD
DIVISION OF CODE ENFORCEMENT

PERMIT RECORD

OCCUPANCY

STREET AND NO. 904-06 SOUTH AVE BLOCK #621 LOT #2

DATE MO.	DA.	YR.	OWNER	CONSTRUCTION	COST	BUILDER	PERMIT NO.	PLAN NO.
3	18	98	Maryse Louissaint	Elec. work	$50.	Cal Elec.	98-261	

[redacted]

LOC 904-06 SOUTH AVE
B 237 50X157
L 2

4A

RECORD OF OWNERSHIP		Date	Recorded Date	Rev. Stamps	Computed Amt.	Mortgage	New
First Natl. Bank of Central Jersey	N.W. MAIN ST. SOMERVILLE N.J. 08876	3.13.74	1.23.76	Aucl	B.237	L. 3	62
ALFRED + INGE LEITON	10 MUNDY LANE WARREN, N.J	7.18.79	7.27.79	(INCL. 908-14 SOUTH AVE)	90,000		2
ALFRED LEITON, 10 MUNDY LN, WARREN NJ		4.22.82	4.26.82	(INCL. 908-14 SOUTH AVE)	NONE		
[illegible] Realty Corp	[illegible]	[illegible]	7.15.83		52,500		
CLAUDE + MARISE LOUISSANT	52 N. 9TH ST. NEWARK	10.2.84	10.4.84		$55,000		

Year	19	19	19	19	19	19	19	19
Land								
Improvements	[illegible]							
Total	[illegible]							

LAND IMPROVEMENTS

	Yes	No
Curbs		
Street		
Sidewalks		
Utilities		
Sewers		

PLOT SKETCH

ZONE

157

50

BUILDING PERMITS

Date	Amount	Permit Number	Construction
[illegible]	[illegible]		A.T.
[illegible]	[illegible]		[illegible]
5-2-83			A.T.
[illegible]	[illegible]		[illegible]
[illegible]			[illegible]
[illegible]	[illegible]		[illegible]
[illegible]	250		[illegible] Roof
[illegible]	327.		New Roof
[illegible]	[illegible]	[illegible]	[illegible]

LAND VALUE COMPUTATION

Lot Size	Unit Front Foot Price	Corner Influence	Depth Factor	Frontage Factor	Depr.	Value
50 X 157	200		1.22	-		12200
					Total	

FORM

Notes: [illegible]

APPRAISED VALUE

Land	12200
Building	29700
Accessory Bldg.	300
Total	42200

REALTY APPRAISAL CO., WEST NEW YORK, N. J.

P[redacted] BUILDIN[redacted]TION [redacted]ND PLAN[redacted]

BUILDING CLASS 3.2

CONDITION Good___ Fair___ Normal ✓ Poor___

Actual Age 50 Eff. Age 20

TYPE AND USE

Combination Stores and					
Apt.	✓	Offices		Loft	
Hotel		Store			
Office		Bank			
Theatre		Gas Sta.			
Auto Showrm. & Gar.					
Industrial					
Warehouse					

STRUCTURAL FRAME

	Conc	Wood	Steel
Columns			
Main Beams			
Joists		✓	
Trusses			
Girder			
Stl. Bar Joists			

Height in Stories 2

1) FOUNDATION

Masonry	✓
Wood or Block Piers	

2) EXT. WALL CONSTR.

	Frt.	Side	Rear
Wood:			
Lined		✓	
Unlined			
Brick			
Concrete Blk.	✓	✓	✓
Stone			
Concrete			
Corr. Iron			
Other			

Store Fronts

Pair	Avg.	Modern
	40	

3) ROOF

Roof Construction: Wood ✓ Steel Deck; Reinforced Concrete; Precast Plank

Roofing: Prepared Roll; Shingle ✓; Built-up ✓; Corr. Metal; Slate

4) FLOORS

Floor Construction	Flr. #
Wood	1-2
Conc. on Grade	
Reinf. Conc.	

Finish Flooring

Wood	2
Asph. Tile	1
Terrazzo	
Ceramic Tile	

5) INTERIOR FINISH

Apt. Area 2 F/L; No. Units: 1; No. Rms. 4

Story	1	2	3
Amount		4	

Office Area; Sm. / Lg.; Other Area; Type; Amount

Partitions	Lin. Ft.	Hgts.
Wood Stud		
Plas.___Side		
Masonry		
Plas.___Side		
Firewalls		

SKETCH

RENTS:

JAN 1 5 1975

HEAT BY: OWNER | TENANT

6) PLUMBING

Utility Connections: Sewer ✓ Water ✓

Fixtures: Single; 2 Fixt. 1; 3 Fixt. 1

	Baths	Kitchens
Modern		
Average	3	1
Old		

7) ELECTRIC WIRING

Conduit ✓ Power Wiring

8) HEATING

None; Stove; Hot Air: 1ST. Pipeless; Grav.; Forced; Fan Units; Steam or Hot Water 2 FL ✓; Stoker; No Boiler

9) BASEMENT

None; Full; Height; Partial: 561 Sq. Ft.; Finished Sq. Ft.; Floor: Dirt; Wd.; Conc. ✓

10) AIR CONDITIONING

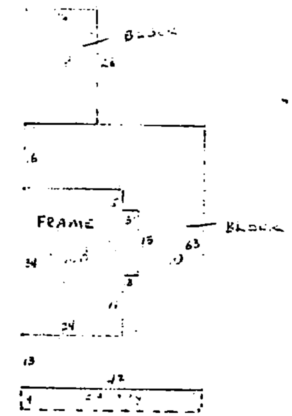
Washed; Refrigerated; Full floor area; No. of floors; Partial: Floor area

11) FIRE PROTECTION

Sprinkler (Flr. area)

12) BLDG. ELEVATORS

Type	#	Cap.	Flrs.
Passenger			
Freight			
Self-service			
Manual			



BUILDING AREA CALCULATIONS

FLOOR OR PART	WIDTH	LENGTH	AREA	HEIGHT	CUBIC FEET
2B	34	34	[illegible]		
	2	15	45	561	
	42	13	546		
	18	14	[illegible]		
	15	15	[illegible]		
	11	5	[illegible]		
	42	16	[illegible]		
	16	[illegible]	[illegible]	[illegible]	
TOTAL AREA			3094	CUBE	

WALL RATIO CALCULATION

GROUND AREA 3094 PERI-METER 266 WALL RATIO 12

BL/L # CD #

BUILDING VALUE CALCULATIONS

ITEM NO.	AREA OR QUAN.	UNIT COST	TOTAL
BASE	561	11.35	[illegible]
[illegible]	[illegible]	4.70	1404

ADDITIONS AND DEDUCTIONS

[illegible]	[illegible]	[illegible]	+ [illegible]
[illegible]	[illegible]	[illegible]	+ [illegible]
[illegible]	[illegible]	[illegible]	+ 1683
[illegible]	[illegible]	[illegible]	+ [illegible]
[illegible]	[illegible]	[illegible]	− [illegible]
[illegible]	81	[illegible]	+ 1972
[illegible]			+ 720
[illegible]	3094	[illegible]	− 1251
[illegible]	[illegible]	2.30	+ 170

REPLACEMENT COST	32447
COST FACTOR	2.51
REPLACEMENT COST	82877

REVISED 19	REVISED 19	REVISED 19	REVISED 19

DEPRECIATION & OBSOLESCENCE

DEPRECIATION

A. EFFECTIVE AGE DEPR.	12 %	%	%	%	%
B. OBSERVED PHYS. COND.	%	%	%	%	%
C. NET CONDITION	[illegible] %	%	%	%	%

OBSOLESCENCE

D. OVERIMPROVEMENT	%	%	%	%	%
E. UNDERIMPROVEMENT	%	%	%	%	%
F. FUNCTIONAL	20 %	%	%	%	%
G. ECONOMIC	20 %	%	%	%	%
H. NET CONDITION	62 %	%	%	%	%
FINAL NET COND.	36 %	%	%	%	%

SUMMARY OF APPRAISED VALUE

PRINCIPAL BUILDING VALUE	29221
ACCESSORY BUILDING VALUE	[illegible]
TOTAL BUILDING VALUE	

DESCRIPTION, REPLACEMENT COST AND APPRAISAL OF ACCESSORY BUILDINGS

Bldg. Ident.	Class No.	Width	Depth	Height	Foundation	Floor	Roof	Wall	Missing Walls	Plbg.	Age	Area	Unit Cost	Adds and Deducts	Cost Factor	Replacement Cost	Net Cond. %	Value
[illegible]												1200	[illegible]			[illegible]	20	[illegible]

NOTES: [illegible]

Insp. By: JD Date: [illegible] Est. By: Date: Refused On:

COMMERCIAL – INDUSTRIAL RECORD CARD

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ATTACHMENT D

6

904-906 South Ave

SUMMARY OF ANALYTICAL RESULTS

0604Soil Test

The Action Levels listed reflect current STL Edison knowledge of the standards and are intended as general guidance for the user. Please consult appropriate regulations and cleanup standards for your specific application

	Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID 1.0 ug/kg
	VOLATILE COMPOUNDS (GC/MS)					
	Chloromethane	520,000	1,000,000	10,000	30	6.5 U
	Bromomethane	79,000	1,000,000	1,000	10	6.5 U
	VinylChloride	2,000	7,000	10,000	5	6.5 U
	Chloroethane	NA	NA	NA	100^	6.5 U
	MethyleneChloride	49,000	210,000	1,000	3^	6.5 U
	Trichlorofluoromethane	NA	NA	NA	2000^	3.9 U
	1,1-Dichloroethene	8000	150,000	10,000	2	6.5 U
	1,1-Dichloroethane	570000	1,000,000	10,000	50^	2.6 U
	trans-1,2-Dichloroethene	1,000,000	1,000,000	50,000	100	6.5 U
	cis-1,2-Dichloroethene	79,000	1,000,000	1,000	70^	6.5 U
	Chloroform	19,000	28,000	1,000	6	6.5 U
	1,2-Dichloroethane	6,000	24,000	1,000	2	1.2 J
	1,1,1-Trichloroethane	210,000	1,000,000	50,000	30	2.6 U
	CarbonTetrachloride	2,000	4,000	1,000	2	6.5 U
	Bromodichloromethane	11,000	46,000	1,000	1	2.6 U
	1,2-Dichloropropane	10,000	43,000	NA	1	0.9 J
(1)	cis-1,3-Dichloropropene	4,000	5,000	1,000	NA	1.3 U
	Trichloroethene	23,000	54,000	1,000	1	6.5 U
	Dibromochloromethane	110,000	1,000,000	1,000	10	1.3 U
	1,1,2-Trichloroethane	22000	420,000	1,000	3	0.6 J
	Benzene	3,000	13,000	1,000	1	3.9 U
(1)	trans-1,3-Dichloropropene	4,000	5,000	1,000	NA	1.3 U
	2-ChloroethylVinylEther	NA	NA	NA	100^	6.5 U
	Bromoform	86,000	370,000	1,000	4	6.5 U
	Tetrachloroethene	4,000	6,000	1,000	1	5.2 U
	1,1,2,2-Tetrachloroethane	34,000	70,000	1,000	1^	1.3 U
	Toluene	1,000,000	1,000,000	500,000	1,000	1.3 U
	Chlorobenzene	37,000	680,000	1,000	50^	6.5 U
	Ethylbenzene	1,000,000	1,000,000	100,000	700	6.5 U
	Xylene(Total)	410,000	1,000,000	67,000	1000^	5.2 U
	Total Confident Conc. VOAs (s)					6.5 U 0
	Total Estimated Conc. VOA TICs (s)					7.1

(1) Values listed reflect the combined standards for the cis and trans isomers of 1,3-Dichloropropene

^ Value is a revision to the Class IIA ground water quality standard based upon the November 18, 1996 Safe Drinking Water Act maximum contaminant level changes and the February 5, 1997 policy m

Checked By: ______

__ OK

__ Make Corrections

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3/22/2007 11:40 AM

SUMMARY OF ANALYTICAL RESULTS

D904Soil Test

Qualifiers

- **U** - The compound was not detected at the indicated concentration.
- **J** - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
- **B** - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
- **NR** - Not analyzed

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Checked By: ______
___ OK
___ Make Corrections

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SUMMARY OF ANALYTICAL RESULTS

D9043oil Test

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non-Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID 2.0 ug/Kg
SEMIVOLATILE COMPOUNDS (GC/MS)					
Phenol	10,000,000	10,000,000	50,000	4,000	880 U
2-Chlorophenol	280,000	5,200,000	10,000	40	880 U
2-Nitrophenol	NA	NA	NA	100^	880 U
2,4-Dimethylphenol	1,100,000	10,000,000	10,000	100	880 U
2,4-Dichlorophenol	170,000	3,100,000	10,000	20	880 U
4-Chloro-3-methylphenol	10,000,000	10,000,000	100,000	100^	880 U
2,4,6-Trichlorophenol	62,000	270,000	10,000	20	880 U
2,4-Dinitrophenol	110,000	2,100,000	10,000	40	2600 U
4-Nitrophenol	NA	NA	NA	100	31 J
4,6-Dinitro-2-methylphenol	NA	NA	NA	100^	2600 U
Pentachlorophenol	6,000	24,000	100,000	1	2600 U
N-Nitrosodimethylamine	NA	NA	NA	20	880 U
bis(2-Chloroethyl)ether	660	3,000	10,000	10	88 U
1,3-Dichlorobenzene	5,100,000	10,000,000	100,000	600	880 U
1,4-Dichlorobenzene	570,000	10,000,000	100,000	75	880 U
1,2-Dichlorobenzene	5100000	10,000,000	50,000	600	840 U
bis(2-chloroisopropyl)ether	2,300,000	10,000,000	10,000	300	880 U
N-Nitroso-di-n-propylamine	660	660	10,000	20	88 U
Hexachloroethane	6,000	100,000	100,000	10	88 U
Nitrobenzene	28,000	520,000	10,000	10	88 U
Isophorone	1,100,000	10,000,000	50,000	100	880 U
bis(2-Chloroethoxy)methane	NA	NA	NA	100^	880 U
1,2,4-Trichlorobenzene	68,000	1,200,000	100,000	9	88 U
Naphthalene	230,000	4,200,000	100,000	300^	220 J
Hexachlorobutadiene	1,000	21,000	100,000	1	180 U
Hexachlorocyclopentadiene	400,000	7,300,000	100,000	50	880 U
2-Chloronaphthalene	NA	NA	NA	600^	880 U
Dimethylphthalate	10,000,000	10,000,000	50,000	NA	880 U
Acenaphthylene	NA	NA	NA	NA	880 U
(1) 2,6-Dinitrotoluene	1,000	4,000	10,000	NA	170 J
Acenaphthene	3,400,000	10,000,000	100,000	NA	160 U
(1) 2,4-Dinitrotoluene	1,000	4,000	10,000	400	530 J
Diethylphthalate	10,000,000	10,000,000	50,000	10	180 U
4-Chlorophenyl-phenylether	NA	NA	NA	5,000	880 U
Fluorene	2,300,000	10,000,000	100,000	100^	880 U
N-Nitrosodiphenylamine	140,000	600,000	100,000	300	700 J
4-Bromophenyl-phenylether	NA	NA	NA	20	27 J
Hexachlorobenzene	660	2,000	100,000	NA	880 U
Phenanthrene	NA	NA	NA	10	88 U
				100^	6200

Checked By: ______
___ OK
___ Make Corrections

3/22/2007 11:40 AM

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SUMMARY OF ANALYTICAL RESULTS

D804Soil Test

Anthracene	10,000,000	10,000,000	100,000	2,000	1500
Di-n-butylphthalate	5,700,000	10,000,000	100,000	900	880 U
Fluoranthene	2,300,000	10,000,000	100,000	300	11000
Pyrene	1,700,000	10,000,000	100,000	200	8900
Benzidine	NA	NA	NA	50	1800 U
Butylbenzylphthalate	1,100,000	10,000,000	100,000	100	880 U
3,3'-Dichlorobenzidine	2,000	6,000	100,000	80	1800 U
Benzo(a)anthracene	800	4,000	500,000	0.2^	4400
Chrysene	9,000	40,000	500,000	5^	4500
bis(2-Ethylhexyl)phthalate	49,000	210,000	100,000	30	240 J
Di-n-octylphthalate	1,100,000	10,000,000	100,000	100	880 U
Benzo(b)fluoranthene	900	4,000	50,000	10^	4000
Benzo(k)fluoranthene	900	4,000	500,000	1^	4600
Benzo(a)pyrene	660	660	100,000	0.2^	4800
Indeno(1,2,3-cd)pyrene	900	4,000	500,000	10^	2200
Dibenz(a,h)anthracene	660	660	100,000	0.5^	740
Benzo(g,h,i)perylene	NA	NA	NA	100^	2200
Total Confident Conc. BNAs (s)					55040
Total Estimated Conc. BNA TICs (s)					11220

(1) Values listed reflect the combined standards for the 2,4/2,6-Dinitrotoluene mixture
Value is a revision to the Class IIA ground water quality standard based upon the November 18, 1996 Safe Drinking Water Act maximum contaminant level changes and the February 5, 1997 policy m

Qualifiers
- U - The compound was not detected at the indicated concentration.
- J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
- B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
- NR - Not analyzed.

Checked By: ____
___ OK
___ Make Corrections

3/22/2007 11:40 AM

SUMMARY OF ANALYTICAL RESULTS

D004Soil Test

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non-Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID 1.0 ug/kg
PESTICIDES/PCBs					
(1) Aroclor-1016	490	2,000	50,000	0.5	88 U
(1) Aroclor-1221	490	2,000	50,000	0.5	88 U
(1) Aroclor-1232	490	2,000	50,000	0.5	88 U
(1) Aroclor-1242	490	2,000	50,000	0.5	88 U
(1) Aroclor-1248	490	2,000	50,000	0.5	88 U
(1) Aroclor-1254	490	2,000	50,000	0.5	88 U
(1) Aroclor-1260	490	2,000	50,000	0.5	88 U
(1) Aroclor-1262	NA	NA	NA	NA	88 U
(1) Aroclor-1268	NA	NA	NA	NA	88 U

(1) Values listed reflect the combined standards for "Total PCBs"
(2) Soil Cleanup criteria is provided for "Endosulfan" without specification if it is for Endosulfan I(alpha-Endosulfan) or Endosulfan II(beta-Endosulfan).

Qualifiers

- U - The compound was not detected at the indicated concentration.
- J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
- B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
- P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.
- * - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.
- NR - Not analyzed

Checked By: ______
___ OK
___ Make Corrections

SUMMARY OF ANALYTICAL RESULTS

U904Soil Test

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non-Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID 1.0 ug/kg
PESTICIDES/PCBs					
Aldrin	40	170	50,000	0.04	8.8 U
alpha-BHC	NA	NA	NA	0.02	8.8 U
beta-BHC	NA	NA	NA	0.2	8.8 U
delta-BHC	NA	NA	NA	100^	8.8 U
gamma-BHC(Lindane)	520	2,200	50,000	0.2	8.8 U
Chlordane	NA	NA	NA	0.5	88 U
4,4'-DDD	3,000	12,000	50,000	0.1	8.8 U
4,4'-DDE	2,000	9,000	50,000	0.1	8.8 U
4,4'-DDT	2,000	9,000	500,000	0.1	13
Dieldrin	42	180	50,000	0.03	8.8 U
(2) Endosulfan I	340,000	6,200,000	50,000	0.4	8.8 U
(2) Endosulfan II	340,000	6,200,000	50,000	0.4	8.8 U
Endosulfan sulfate	NA	NA	NA	0.4	8.8 U
Endrin	17,000	310,000	50,000	2	8.8 U
Endrin aldehyde	NA	NA	NA	NA	8.8 U
Heptachlor	150	650	50,000	0.4	8.8 U
Heptachlor epoxide	NA	NA	NA	NA	10 P*
Toxaphene	100	200	50,000	3	88 U

(1) Values listed reflect the combined standards for "Total PCBs"
(2) Soil Cleanup criteria is provided for "Endosulfan" without specification if it is for Endosulfan I(alpha-Endosulfan) or Endosulfan II(beta-Endosulfan).

Qualifiers
U - The compound was not detected at the indicated concentration.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.
P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.
* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.
NR - Not analyzed

Checked By: ____
___ OK
___ Make Corrections

3/22/2007 11:40 AM

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ID:19737591366 P.5

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SUMMARY OF ANALYTICAL RESULTS

D904Soil Test

Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor Units	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non-Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID NA mg/kg
METALS					
Antimony	14	340	NA	20	1.5 U
Arsenic	20	20	NA	8	4.3
Beryllium	2	2	NA	20	0.46 B
Cadmium	39	100	NA	4	0.11 U
Chromium	NA	NA	NA	100	22.5
Copper	600	600	NA	1,000	31.2
Lead	400	600	NA	10	122
Mercury	14	270	NA	2	0.08
Nickel	250	2,400	NA	100	16.6
Selenium	63	3,100	NA	50	1.1 U
Silver	110	4,100	NA	30	0.37 U
Thallium	2	2	NA	10	1.2 U
Zinc	1,500	1,500	NA	5,000	128

Qualifiers

U - The compound was not detected at the indicated concentration.

B - Reported value is less than the Reporting Limit but greater than the Instrument Detection Limit

N - The spiked sample recovery is not within control limits

NR - Not analyzed

Checked By ____

___ OK

___ Make Corrections

3/22/2007 11:40 AM

SUMMARY OF ANALYTICAL RESULTS

D904Soil Test

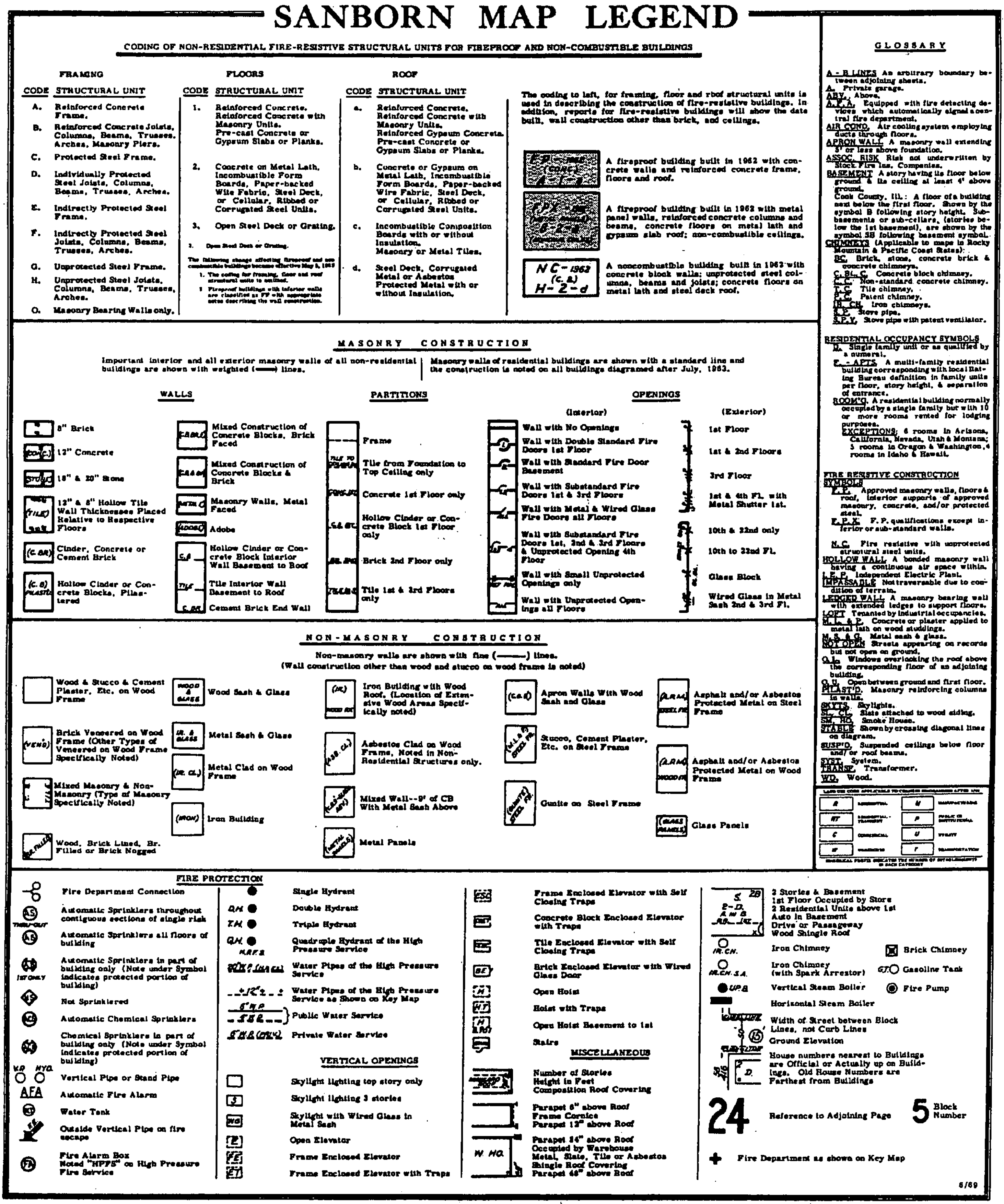
Sample ID Lab Sample Number Sampling Date Matrix Dilution Factor - NA Units - See Parameter	NJ Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Non-Residential Direct Contact Soil Cleanup Criteria (ug/kg)	NJ Impact to Ground Water Soil Cleanup Criteria (ug/kg)	NJ Higher of PQLs and GW Quality 2000 Criteria (ug/l)	Pile 813353 03/14/07 SOLID
WET CHEMISTRY					
TotalCyanide - mg/kg	1,100,000	21,000,000	NA	200	0.5 U
TotalPhenols - mg/kg	NA	NA	NA	NA	5.0 U

Qualifiers

U - The compound was not detected at the indicated concentration.
NR - Not analyzed.
Ignitability.
0 - Non ignitable.
1 - Ignitable

Checked By: ______
__ OK
__ Make Corrections

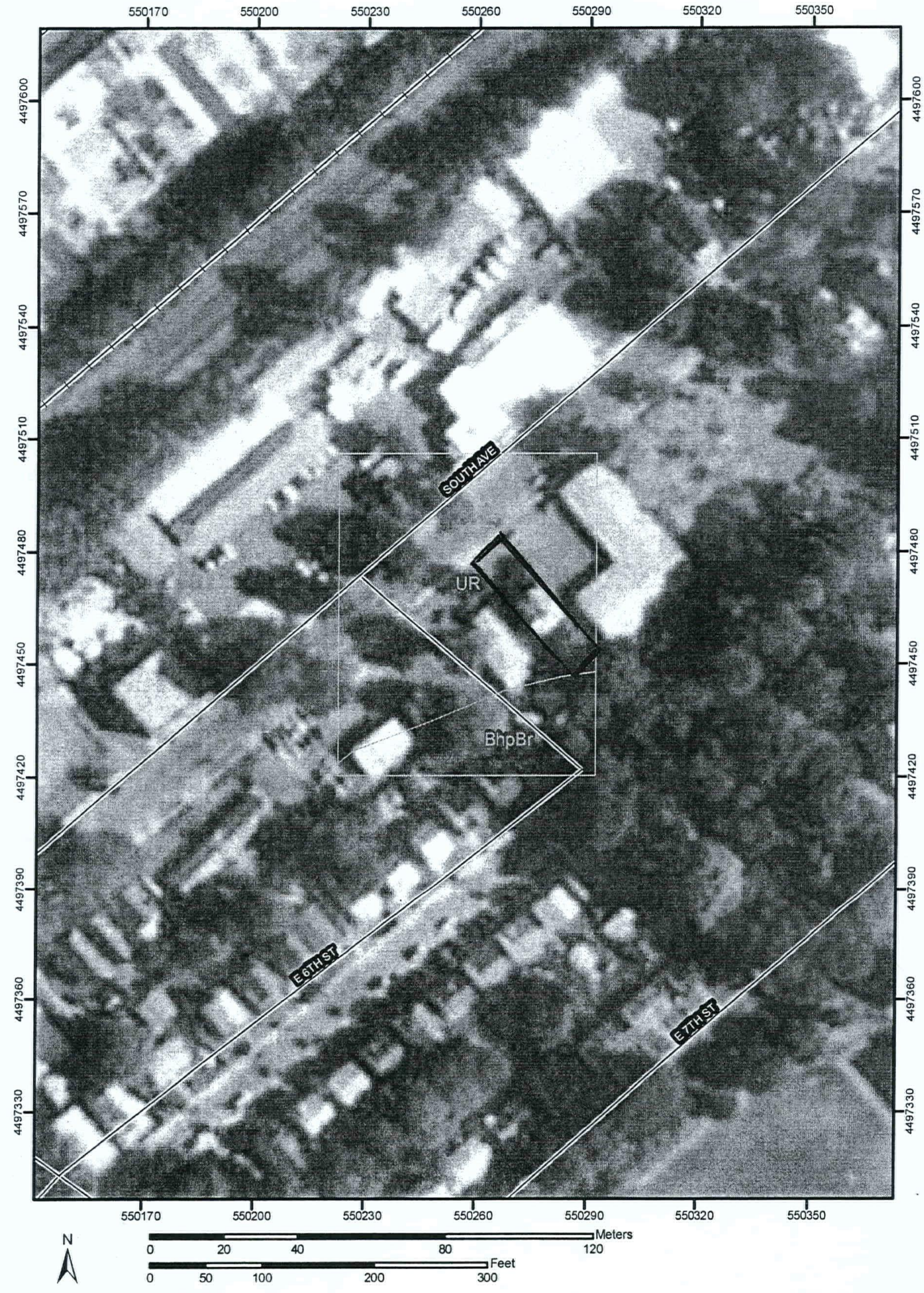
3/22/2007 11:40 AM



Map legend for understanding black-and-white editions of fire insurance maps issued in recent years by the Sanborn Map Company.

ATTACHMENT E

Soil Map–Union County, New Jersey



E

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Union County, New Jersey
Survey Area Data: Version 6, Aug 18, 2008

Date(s) aerial images were photographed: 4/16/1995; 4/10/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Map Unit Legend

Union County, New Jersey (NJ039)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BhpBr	Birdsboro-Urban land complex, 0 to 6 percent slopes, rarely flooded	0.3	20.7%
UR	Urban land	1.2	79.3%
Totals for Area of Interest (AOI)		1.5	100.0%

ATTACHMENT F

RECORD OF COMMUNICATION
REGIONAL SAMPLE CONTROL CENTER

DATE: 7/18/2008
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: Hazardous Waste Support Section (HWSS)/RSCC
TO: HWSS ESAT-TOPO

TDF# 08-0676

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE: Former Stop and Wash **CASE #: 37626**

SDG#: B4TY5, B4TY7, B4W22 **SAMPLER: NJDEP**

PROJ. CODE: SI SITE SPILL #: ZZ	**#SAMPLES**	**MATRIX**
LAB: DATAC OPERABLE UNIT: 00	**34**	**Water**
TURN-AROUND-TIME: 21 day	**5**	**Soil**
CERCLIS ID #: N/A	**FRACTION:**	**VOA**

Contaminant(s) of Concern (If known)

REGION II RSCC DATA TRANSFER LOG

Relinquished By: Signature	Date/Time	Received By: Signature	Date/Time
[signature]	7/31/08 9:05 Am	Dorina Christina Allin	7/31/08 9:25am.
Dorina Christina Allin	8/1/08	R. J. Shelley	8/1/08
R. J. Shelley	8/6/08 10:40am	J. Rosenberg	8-6-08 10:40 Am
J Rosenberg	8-7-08 2:15 Pm	[signature]	8/7/08 2:15
~~J Rosenberg 8-7-08 3 Pm~~			
[signature]	8/7/08 3 Pm	J Rosenberg	8-7-08 3 Pm
[signature]	8/08/08 9:00 am	Dorina Christina Allin	9:00am.
Dorina Christina Allin	8/8/10:15am	[signature]	8/08/08 10:15am

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY5

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE87BTY5

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	0.26	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY5

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE87BTY5

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TY5

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE87BTY5

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ______ Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY6

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE88BTY6

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY6

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE88BTY6

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
B4TY6
FB

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8177025002

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PE88BTY6

Level: (TRACE/LOW/MED) LOW   Date Received: 06/25/2008

% Moisture: not dec. ______   Date Analyzed: 06/26/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L   Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W14

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE69BW14

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W14

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE69BW14

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ______ Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.34	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	2.3	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W14

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ____   SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8177025003

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PE69BW14

Level: (TRACE/LOW/MED) LOW   Date Received: 06/25/2008

% Moisture: not dec. ____   Date Analyzed: 06/25/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ____ (uL)   Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L   Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W15

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE70BW15

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W15

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE70BW15

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.26	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.77	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W15

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE70BW15

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W16

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE71BW16

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ______ Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W16

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE71BW16

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ______ Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.46	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.54	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W16

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE71BW16

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/25/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
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11					
12					
13					
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19					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W18

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8177025006

Sample wt/vol: 5.00   (g/mL) mL   Lab File ID: PE76BW18

Level: (TRACE/LOW/MED) LOW   Date Received: 06/25/2008

% Moisture: not dec. ______   Date Analyzed: 06/26/2008

GC Column: DB624   ID: 0.53   (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0   (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	0.98	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	U/R

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SOM01.2 (6/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W18

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025006

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE76BW18

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.77	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	18.	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W18

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025006

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE76BW18

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:(ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W19

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025007

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE77BW19

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	0.31	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W19

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025007

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE77BW19

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ________ Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.36	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W19

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025007

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE77BW19

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
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19					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W20

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE78BW20

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W20

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE78BW20

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.40	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W20

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE78BW20

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ______ Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W23

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025009

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE79BW23

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.68	J
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	0.46	J
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.1	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W23

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025009

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE79BW23

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.65	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.33	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	13.	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W23

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8177025009

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PE79BW23

Level: (TRACE/LOW/MED) LOW   Date Received: 06/25/2008

% Moisture: not dec. ______   Date Analyzed: 06/26/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L   Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
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11					
12					
13					
14					
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16					
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21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W24

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025010

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE80BW24

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.4	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	UR

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W24

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8177025010

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PE80BW24

Level: (TRACE/LOW/MED) LOW   Date Received: 06/25/2008

% Moisture: not dec. ______   Date Analyzed: 06/26/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.24	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.82	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W24

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025010

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE80BW24

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W25

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ____ SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE81BW25

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. ____ Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	17.	
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W25

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE81BW25

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.86	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.79	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W25

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE81BW25

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W28

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE82BW28

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.2	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

123

SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W28

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE82BW28

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.95	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.20	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	25.	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W28

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE82BW28

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W29

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE83BW29

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.0	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W29

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE83BW29

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.93	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	1.0	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W29

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE83BW29

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W30

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025014

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE84BW30

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W30

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025014

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE84BW30

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	UJ
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	3.2	J
10061-02-6	trans-1,3-Dichloropropene	5.0	UJ
79-00-5	1,1,2-Trichloroethane	5.0	UJ
127-18-4	Tetrachloroethene	1.2	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W30

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025014

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE84BW30

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01	115-07-1	Propene	3.08	5.3	JN
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W49

+B

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE85BW49

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W49

TB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE85BW49

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W49

TB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE85BW49

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W54

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE86BW54

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.2	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W54

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE86BW54

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.96	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.32	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	23.	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: B4W54

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY5

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8177025016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PE86BW54

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. Date Analyzed: 06/26/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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DATA CHEM LABORATORIES, INC.

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SDG Narrative
Low/Medium Volatiles

Contract: EPW05026
Case: 37626
SDG: B4TY5

Laboratory Name: Datachem Laboratories

Sample Number	DCL Sample ID	pH	Dilution
B4TY5	8177025001	1	
B4TY6	8177025002	1	
B4W14	8177025003	1	
B4W15	8177025004	1	
B4W16	8177025005	1	
B4W18	8177025006	1	
B4W19	8177025007	1	
B4W20	8177025008	1	
B4W23	8177025009	1	
B4W24	8177025010	1	
B4W25	8177025011	1	
B4W28	8177025012	1	
B4W29	8177025013	1	
B4W30	8177025014	1	
B4W49	8177025015	1	
B4W54	8177025016	1	

General SDG Information: Samples were analyzed according to USEPA CLP Statement of Work SOM01.2. There were no deviations from the SOW except as listed below.

Instrumentation: Hewlett Packard 5972-P GC/MSD with electron impact ionization and quadrupole detector scanning at a mass range of 35 to 300 amu.
Column: J&W Scientific DB624 – 75 meters, 0.53 mm id., 3 μm film
Temperature Program: *10°C (2.0 min) 8°/min ramp to 180° (0.1 min) 60°/min ramp to 220° *Cryogenically cooled with liquid nitrogen.
Purge and Trap Device:
Tekmar Dynamic Headspace Concentrator ALS 2016/LSC 2000
Carrier Gas: Helium Purge Gas: Helium
Purge Flow: 35 mL/min Trap: Vocarb 3000 Trap Temp: 35°C

960 West LeVoy Drive Salt Lake City, UT 84123
800-356-9135 801-266-7700 Fax: 801-268-9992
www.datachem.com

DATA CHEM LABORATORIES, INC.

Sample Preparation: This method has no extraction procedure for the water matrix. Five milliliters of water sample was spiked with Internal Standard/DMC Solution and purged.

Instrument Calibration: The GC/MS was hardware tuned to meet the criteria for a 50 ng purging of 4-Bromofluorobenzene as specified in the SOW. This tune check is valid for 12 hours.

Initial and Continuing Calibration Verification: The five point initial calibration curve, which was analyzed prior to sample analysis, met the specified criteria in the SOW except for the minimum RRF for the Dioxanes. A continuing calibration standard (CCAL) was analyzed prior to sample analysis. A final calibration standard (FCAL) was analyzed after sample analysis. All calibration standards met all method criteria as specified in the SOW except for the minimum RRF for the Dioxanes. Manual edits were made in the calibration standards and in some samples for various mis-called peaks. Every manual integration is noted by an "m" footnote on the quantitation report, and an additional graphics page is included for each manual integration to show how the peak was integrated. Analytes that required manual integrations are listed.

Sample	Initial Scan	Final Scan	Analyte
VSTD100WP	1942	2007	1, 2-Dichlorobenzene
VSTD100WP	1511	1541	m,p-Xylene
VSTD200WP	1388	1422	1, 2-Dibromoethane

Blank Analysis: Method blanks were prepared using 5 mL of spiked reagent water. The blanks were analyzed prior to sample analysis and were free of volatile organic contaminants within the specifications of the SOW.

Sample Analysis: All deuterated monitoring compounds and internal standard area responses were within the required acceptance criteria. All samples were analyzed within ten days of verified sample receipt.

MS/MSD Analysis: As per Region 2, Matrix Spike/Matrix Spike Duplicate analyses are not required.

Miscellaneous Comments: As instructed in the SOW, alkanes are not reported separately on the Form 1J but rather are summarized as "total alkanes."

With regard to the naming of tentatively-identified compounds (TICs), spectral matches above 85 percent are reported as a specific isomer unless the analyst has a specific reason to assign a different name. The exact isomer configuration, as reported, may not be absolutely accurate. Reasons for assigning a TIC name other than the match with the highest fit value above 85% include: instances in which the analyst has previous experience with respect to a specific compound; when the first computer-generated match is a target compound and retention time information clearly indicates the TIC is in fact not the target compound; and when a specific compound name has already been assigned to a peak. Even though specific names will usually be given to TICs with

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spectral fits above 85%, it must be understood by the data user that TIC names are very tentative, and it cannot be assumed that the specific isomers reported are correct.

Sample Calculations:

Relative Response Factor: $$RRF = \left[\frac{A_x}{A_{is}}\right]\left[\frac{C_{is}}{C_x}\right]$$

Where A_x is the area of the characteristic ion for the compound to be measured, A_{is} is the area of the characteristic ion for the internal standard , C_{is} is the concentration of the internal standard, and C_x is the concentration of the compound to be measured.

Concentration in ug/L: $$C = \left[\frac{(A_x)\,(I_s)\,(Df)}{(A_{is})\,(RRF)\,(V_o)}\right]$$

Where I_s is the amount of internal standard spiked in ng (250 ng), Df is a dilution factor (1 if no dilutions are made), RRF is the mean relative response factor (assumed to be 1 for non target analytes) and V_o is the total volume purged in mL.

I certify that this Sample Data Package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy Sample Data Package and in the electronic data deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

July 11, 2008

Joseph Gress
Chemist
Volatile Organic Analysis Section

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Sample Delivery Group (SDG) Cover Sheet

SDG Number: B4TY5

☐ ARO ☐ PEST ☐ BNA ☐ BNASIM ☐ VT ☐ VOASIM ☒ VLM

Laboratory Name: DataChem Laboratories, Inc.

Laboratory Code: DATAC

Contract No.: EP-W-05-026

Case No.: 37626

Analysis Price: N/A

SDG Turnaround: 21

Modified Analysis (if applicable):

Modification Reference No.: N/A

EPA Sample Numbers in SDG (Listed in Numerical Order)

1) B4TY5 ✓	7) B4W19 ✓	13) B4W29 ✓	19)
2) B4TY6 ✓	8) B4W20 ✓	14) B4W30 ✓	20)
3) B4W14 ✓	9) B4W23 ✓	15) B4W49 ✓	21)
4) B4W15 ✓	10) B4W24 ✓	16) B4W54 ✓	22)
5) B4W16 ✓	11) B4W25 ✓	17) ~~MC 7/1/08~~	23) ~~MC 7/1/08~~
6) B4W18 ✓	12) B4W28 ✓	18)	24)

B4TY5
First Sample in SDG

B4W54
Last Sample in SDG

06/25/08
First Sample Receipt Date

06/25/08
Last Sample Receipt Date

Note: *There are a maximum of 20 field samples (excluding PE samples) in an SDG. Attach the TR/COC records to this form in alphanumeric order (the order listed above on this form).*

Signature: Meredith Edwards

Date: 7/1/2008

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Edwards, Meredith D.

From: Olson, Roxanne
Sent: Wednesday, June 25, 2008 11:35 AM
To: Edwards, Meredith D.
Subject: FW: Region 02 | Case 37626 | Lab DATAC | Issue Documentation | FINAL

Attachments: 2008062510330026.pdf

2008062510330026
.pdf (249 KB)

-----Original Message-----
From: Von Moll, Kristin [mailto:kvonmoll@fedcsc.com]
Sent: Wednesday, June 25, 2008 11:40 AM
To: Olson, Roxanne
Cc: Adly Michael; Jennifer Ferranda
Subject: Region 02 | Case 37626 | Lab DATAC | Issue Documentation | FINAL

Roxy,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC does not list a Case number. SMO believes that these samples are for Case 37626.
Resolution 1: Per Region 2, the correct Case number should be 37626.
The issue should be noted in the SDG Narrative.

-Insufficient/inappropriate designation of laboratory QC- Issue 2: There are samples designated for laboratory QC. Per scheduling laboratory QC is not required for this Case.
Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples. This Region only requires laboratory QC on the Pest and/or ARO fraction for Organics.
Summary End

Please let me know if you have any questions.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

-----Original Message-----
From: Michael.Adly@epamail.epa.gov [mailto:Michael.Adly@epamail.epa.gov]

Sent: Wednesday, June 25, 2008 1:31 PM
To: Von Moll, Kristin
Cc: feranda.jennifer@epa.gov
Subject: Re: NEW ISSUE #31 | Case 37626 | Lab DATAC | Issue Documentation

Kristin,

Issue 1 Yes, the correct case number is 37626.

Issue 2 the answer provided is correct and acceptable.

Thanks.

Adly A. Michael
Region 2 - HWSB - HWSS
Phone: (732) 906-6161
Fax: (732) 321-6622

"Von Moll, Kristin" <kvonmoll@fedcsc.com>

06/25/2008 01:27 PM

To
Adly Michael/R2/USEPA/US@EPA, Jennifer Feranda/R2/USEPA/US@EPA

cc

Subject
NEW ISSUE #31 | Case 37626 | Lab DATAC | Issue Documentation

Hi Adly,

DATAC is reporting the following issues regarding Case 37626. I mentioned this to you this morning about the fax we received here at SMO that was addressed to you. The fax cover page has Case 37626 written on it; however, the TR does not list a Case number.

-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC does not list a Case number. SMO believes that these samples are for Case 37626.

-Insufficient/inappropriate designation of laboratory QC- Issue 2: There are samples designated for laboratory QC. Per scheduling laboratory QC is not required for this Case. Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples. This Region only requires laboratory QC on the Pest and/or ARO fraction for Organics.

Please advise on what the correct Case number should be. Can you also please advise if the resolution in issue 2 can be applied to any future shipments for this Case that designate a VOA sample for lab QC.

Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

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use of e-mail for such purpose.

-----Original Message-----
From: Olson, Roxanne [mailto:olsonr@datachem.com]
Sent: Wednesday, June 25, 2008 1:10 PM
To: Von Moll, Kristin
Subject: FW: DCL Scanned Image Sender V4.2

Kristin: Here is the TR for the samples we received today for case ???? Are you correct in your assumption?

Roxy

From: Von Moll, Kristin
Sent: Wednesday, June 25, 2008 11:06 AM
To: Roxy Olson
Subject: Region 02 | Case 37626

Hi Roxy,

There are some samples that you should be receiving today under airbill 849381325393. It looks like the TR may not have a Case number on it and there are samples designated for VOA lab QC. I believe these samples are likely for Case 37626.

Please send me a copy of the TR when these samples are received and let me know if there are any other issues.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

(See attached file: 2008062510330026.pdf)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY7

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF20BTY7

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY7

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF20BTY7

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TY7

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013001

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF20BTY7

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY8

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF21BTY8

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	0.36	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TY8

FB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013002

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF21BTY8

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TY8
FB

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.:   SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8179013002

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PF21BTY8

Level: (TRACE/LOW/MED) LOW   Date Received: 06/27/2008

% Moisture: not dec.   Date Analyzed: 07/02/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L   Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ0

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF03BTZ0

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	UJ
75-15-0	Carbon disulfide	11.	
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	UJ
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

29

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ0

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF03BTZ0

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.41	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	8.0	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TZ0

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013003

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF03BTZ0

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ1

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF04BTZ1

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ1

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF04BTZ1

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.89	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	1.4	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TZ1

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013004

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF04BTZ1

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ2

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF05BTZ2

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.9	J
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0 ~~2.7~~	~~J~~ U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ2

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ____   SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8179013005

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PF05BTZ2

Level: (TRACE/LOW/MED) LOW   Date Received: 06/27/2008

% Moisture: not dec. ____   Date Analyzed: 07/01/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ____ (uL)   Soil Aliquot Volume: ____ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TZ2

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013005

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF05BTZ2

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
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19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ4

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8179013006

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PF06BTZ4

Level: (TRACE/LOW/MED) LOW   Date Received: 06/27/2008

% Moisture: not dec. ______   Date Analyzed: 07/01/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0 ~~0.33~~	~~J~~ U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	0.53	J
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4TZ4

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013006

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF06BTZ4

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.96	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	4.1	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4TZ4

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013006

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF06BTZ4

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W02

Lab Name: DataChem Laboratories, Inc.　　Contract: EP-W-05-026

Lab Code: DATAC　Case No.: 37626　Mod. Ref No.: ______　SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER　　Lab Sample ID: 8179013007

Sample wt/vol: 5.00　(g/mL) mL　　Lab File ID: PF07BW02

Level: (TRACE/LOW/MED) LOW　　Date Received: 06/27/2008

% Moisture: not dec. ______　　Date Analyzed: 07/01/2008

GC Column: DB624　ID: 0.53　(mm)　　Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)　　Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W02

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013007

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF07BW02

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.56	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	2.6	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W02

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013007

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF07BW02

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W03

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF08BW03

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W03

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF08BW03

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.73	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	1.4	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W03

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013008

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF08BW03

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W04

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013009

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF09BW04

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ________ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W04

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013009

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF09BW04

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	1.4	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	2.9	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W04

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013009

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF09BW04

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
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10					
11					
12					
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22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W06

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013010

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF10BW06

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	1.6	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W06

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013010

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF10BW06

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.71	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.33	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	2.5	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W06

Lab Name: DataChem Laboratories, Inc.   Contract: EP-W-05-026

Lab Code: DATAC   Case No.: 37626   Mod. Ref No.: ______   SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER   Lab Sample ID: 8179013010

Sample wt/vol: 5.00 (g/mL) mL   Lab File ID: PF10BW06

Level: (TRACE/LOW/MED) LOW   Date Received: 06/27/2008

% Moisture: not dec. ______   Date Analyzed: 07/01/2008

GC Column: DB624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L   Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W07

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF11BW07

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ________ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W07

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF11BW07

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.59	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.86	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W07

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013011

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF11BW07

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W08

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF12BW08

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W08

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF12BW08

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ________ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	1.7	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	0.81	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W08

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013012

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF12BW08

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W10

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF13BW10

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	7.4	
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.2	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W10

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF13BW10

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.87	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	3.3	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W10

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013013

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF13BW10

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:(ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W11

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013014

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF14BW11

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.6	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W11

Lab Name: DataChem Laboratories, Inc.　　Contract: EP-W-05-026

Lab Code: DATAC　Case No.: 37626　Mod. Ref No.: ______　SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER　　Lab Sample ID: 8179013014

Sample wt/vol: 5.00 (g/mL) mL　　Lab File ID: PF14BW11

Level: (TRACE/LOW/MED) LOW　　Date Received: 06/27/2008

% Moisture: not dec. ______　　Date Analyzed: 07/01/2008

GC Column: DB624　ID: 0.53 (mm)　　Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)　　Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	1.6	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W11

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013014

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF14BW11

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W12

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF15BW12

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.3	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~R

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W12

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF15BW12

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ________ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	1.4	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	3.2	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W12

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013015

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF15BW12

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W33

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF16BW33

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	0.33	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.1	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W33

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF16BW33

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	0.67	J
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.64	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	16.	
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W33

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013016

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF16BW33

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W45

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013017

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF17BW45

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	0.35	J
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	1.3	J
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W45

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013017

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF17BW45

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	0.75	J
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	3.4	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W45

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013017

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF17BW45

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/01/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W50

TB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013018

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF22BW50

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
75-71-8	Dichlorodifluoromethane	5.0	U
74-87-3	Chloromethane	5.0	U
75-01-4	Vinyl chloride	5.0	U
74-83-9	Bromomethane	5.0	U
75-00-3	Chloroethane	5.0	U
75-69-4	Trichlorofluoromethane	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.0	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.0	U
79-20-9	Methyl acetate	5.0	U
75-09-2	Methylene chloride	5.0	U
156-60-5	trans-1,2-Dichloroethene	5.0	U
1634-04-4	Methyl tert-butyl ether	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
156-59-2	cis-1,2-Dichloroethene	5.0	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.0	U
67-66-3	Chloroform	5.0	U
71-55-6	1,1,1-Trichloroethane	5.0	U
110-82-7	Cyclohexane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
71-43-2	Benzene	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
123-91-1	1,4-Dioxane	100	~~U~~R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W50

TB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013018

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF22BW50

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 5.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
79-01-6	Trichloroethene	5.0	U
108-87-2	Methylcyclohexane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
75-27-4	Bromodichloromethane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
127-18-4	Tetrachloroethene	5.0	U
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.0	U
106-93-4	1,2-Dibromoethane	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
95-47-6	o-Xylene	5.0	U
179601-23-1	m,p-Xylene	5.0	U
100-42-5	Styrene	5.0	U
75-25-2	Bromoform	5.0	U
98-82-8	Isopropylbenzene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
541-73-1	1,3-Dichlorobenzene	5.0	U
106-46-7	1,4-Dichlorobenzene	5.0	U
95-50-1	1,2-Dichlorobenzene	5.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: B4W50

TB

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4TY7

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: 8179013018

Sample wt/vol: 5.00 (g/mL) mL Lab File ID: PF22BW50

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. ______ Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/L Purge Volume: 5.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
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19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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DATA CHEM LABORATORIES, INC.

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SDG Narrative
Low/Medium Volatiles

Contract: EPW05026
Case: 37626
SDG: B4TY7

Laboratory Name: Datachem Laboratories

Sample Number	DCL Sample ID	pH	Dilution
B4TY7	8179013001	1	
B4TY8	8179013002	1	
B4TZ0	8179013003	1	
B4TZ1	8179013004	1	
B4TZ2	8179013005	1	
B4TZ4	8179013006	1	
B4W02	8179013007	1	
B4W03	8179013008	1	
B4W04	8179013009	1	
B4W06	8179013010	1	
B4W07	8179013011	1	
B4W08	8179013012	1	
B4W10	8179013013	1	
B4W11	8179013014	1	
B4W12	8179013015	1	
B4W33	8179013016	1	
B4W45	8179013017	1	
B4W50	8179013018	1	

General SDG Information: Samples were analyzed according to USEPA CLP Statement of Work SOM01.2. There were no deviations from the SOW except as listed below.

Instrumentation: Hewlett Packard 5972-P GC/MSD with electron impact ionization and quadrupole detector scanning at a mass range of 35 to 300 amu.
Column: J&W Scientific DB624 – 75 meters, 0.53 mm id., 3 µm film
Temperature Program: *10°C (2.0 min) 8°/min ramp to 180° (0.1 min) 60°/min ramp to 220° *Cryogenically cooled with liquid nitrogen.
Purge and Trap Device:
Tekmar Dynamic Headspace Concentrator ALS 2016/LSC 2000
Carrier Gas: Helium Purge Gas: Helium
Purge Flow: 35 mL/min Trap: Vocarb 3000 Trap Temp: 35°C

DATA CHEM LABORATORIES, INC.

Sample Preparation: This method has no extraction procedure for the water matrix. Five milliliters of water sample was spiked with Internal Standard/DMC Solution and purged.

Instrument Calibration: The GC/MS was hardware tuned to meet the criteria for a 50 ng purging of 4-Bromofluorobenzene as specified in the SOW. This tune check is valid for 12 hours.

Initial and Continuing Calibration Verification: The five point initial calibration curve, which was analyzed prior to sample analysis, met the specified criteria in the SOW except for the minimum RRF for the Dioxanes. A continuing calibration standard (CCAL) was analyzed prior to sample analysis. A final calibration standard (FCAL) was analyzed after sample analysis. All calibration standards met all method criteria as specified in the SOW except for the minimum RRF for the Dioxanes. Manual edits were made in the calibration standards and in some samples for various mis-called peaks. Every manual integration is noted by an "m" footnote on the quantitation report, and an additional graphics page is included for each manual integration to show how the peak was integrated. Analytes that required manual integrations are listed.

Sample	Initial Scan	Final Scan	Analyte
VSTD100WP	1942	2007	1, 2-Dichlorobenzene
VSTD100WP	1511	1541	m,p-Xylene
VSTD200WP	1388	1422	1, 2-Dibromoethane

Blank Analysis: Method blanks were prepared using 5 mL of spiked reagent water. The blanks were analyzed prior to sample analysis and were free of volatile organic contaminants within the specifications of the SOW.

Sample Analysis: All deuterated monitoring compounds and internal standard area responses were within the required acceptance criteria. All samples were analyzed within ten days of verified sample receipt.

MS/MSD Analysis: As per Region 2, Matrix Spike/Matrix Spike Duplicate analyses are not required.

Miscellaneous Comments: As instructed in the SOW, alkanes are not reported separately on the Form 1J but rather are summarized as "total alkanes."

With regard to the naming of tentatively-identified compounds (TICs), spectral matches above 85 percent are reported as a specific isomer unless the analyst has a specific reason to assign a different name. The exact isomer configuration, as reported, may not be absolutely accurate. Reasons for assigning a TIC name other than the match with the highest fit value above 85% include: instances in which the analyst has previous experience with respect to a specific compound; when the first computer-generated match is a target compound and retention time information clearly indicates the TIC is in fact not the target compound; and when a specific compound name has already been assigned to a peak. Even though specific names will usually be given to TICs with

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spectral fits above 85%, it must be understood by the data user that TIC names are very tentative, and it cannot be assumed that the specific isomers reported are correct.

Sample Calculations:

Relative Response Factor: $$RRF = \left[\frac{A_x}{A_{is}}\right]\left[\frac{C_{is}}{C_x}\right]$$

Where A_x is the area of the characteristic ion for the compound to be measured, A_{is} is the area of the characteristic ion for the internal standard , C_{is} is the concentration of the internal standard, and C_x is the concentration of the compound to be measured.

Concentration in ug/L: $$C = \left[\frac{(A_x)\,(I_s)\,(Df)}{(A_{is})\,(RRF)\,(V_o)}\right]$$

Where I_s is the amount of internal standard spiked in ng (250 ng), Df is a dilution factor (1 if no dilutions are made), RRF is the mean relative response factor (assumed to be 1 for non target analytes) and V_o is the total volume purged in mL.

I certify that this Sample Data Package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy Sample Data Package and in the electronic data deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

July 15, 2008

Joseph Gress
Chemist
Volatile Organic Analysis Section

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JUL 17 2008
HAZ. WASTE SUPPORT SEC.

Sample Delivery Group (SDG)
Cover Sheet

SDG Number: B4TY7

☐ ARO ☐ PEST ☐ BNA ☐ BNASIM ☐ VT ☐ VOASIM ☒ VLM

Laboratory Name: DataChem Laboratories, Inc. Laboratory Code: DATAC

Contract No.: EP-W-05-026 Case No.: 37626

Analysis Price: N/A SDG Turnaround: 21

Modified Analysis (if applicable):

Modification Reference No.: N/A

EPA Sample Numbers in SDG (Listed in Numerical Order)

1) B4TY7	7) B4W02	13) B4W10	19)
2) B4TY8	8) B4W03	14) B4W11	20)
3) B4TZ0	9) B4W04	15) B4W12	21)
4) B4TZ1	10) B4W06	16) B4W33	22)
5) B4TZ2	11) B4W07	17) B4W45	23)
6) B4TZ4	12) B4W08	18) B4W50	24)

B4TY7
First Sample in SDG

B4W50
Last Sample in SDG

06/27/08
First Sample Receipt Date

06/27/08
Last Sample Receipt Date

Note: *There are a maximum of 20 field samples (excluding PE samples) in an SDG. Attach the TR/COC records to this form in alphanumeric order (the order listed above on this form).*

Signature: [signature] Date: 7/5/2008

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Edwards, Meredith D.

From: Olson, Roxanne
Sent: Friday, June 27, 2008 8:16 AM
To: Edwards, Meredith D.
Subject: FW: Case 37626

From: Von Moll, Kristin [mailto:kvonmoll@fedcsc.com]
Sent: Friday, June 27, 2008 7:57 AM
To: Olson, Roxanne
Subject: Case 37626

Hi Roxy,

It looks like another set of samples were shipped for Case 37626 without a Case number. They were shipped under airbill 849381325408 and you should be receiving them today.

Please let me know when you receive these samples and if there are any other issues associated with them.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W22

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028001

Sample wt/vol: 6.15 (g/mL) g Lab File ID: SA99C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	4.7	U
74-87-3	Chloromethane	4.7	U
75-01-4	Vinyl chloride	4.7	U
74-83-9	Bromomethane	4.7	U
75-00-3	Chloroethane	4.7	U
75-69-4	Trichlorofluoromethane	4.7	U
75-35-4	1,1-Dichloroethene	4.7	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U
67-64-1	Acetone	9.3	U
75-15-0	Carbon disulfide	4.7	U
79-20-9	Methyl acetate	4.7	U
75-09-2	Methylene chloride	4.7 ~~0.50~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	4.7	U
1634-04-4	Methyl tert-butyl ether	4.7	U
75-34-3	1,1-Dichloroethane	4.7	U
156-59-2	cis-1,2-Dichloroethene	7.2	
78-93-3	2-Butanone	9.3	U
74-97-5	Bromochloromethane	4.7	U
67-66-3	Chloroform	4.7	U
71-55-6	1,1,1-Trichloroethane	4.7	U
110-82-7	Cyclohexane	4.7	U
56-23-5	Carbon tetrachloride	4.7	U
71-43-2	Benzene	4.7	U
107-06-2	1,2-Dichloroethane	4.7	U
123-91-1	1,4-Dioxane	93.	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W22

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028001

Sample wt/vol: 6.15 (g/mL) g Lab File ID: SA99C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	1.0	J
108-87-2	Methylcyclohexane	4.7	U
78-87-5	1,2-Dichloropropane	4.7	U
75-27-4	Bromodichloromethane	4.7	U
10061-01-5	cis-1,3-Dichloropropene	4.7	U
108-10-1	4-Methyl-2-Pentanone	9.3	U
108-88-3	Toluene	4.7 ~~0.16~~	~~JB~~ U
10061-02-6	trans-1,3-Dichloropropene	4.7	U
79-00-5	1,1,2-Trichloroethane	4.7	U
127-18-4	Tetrachloroethene	22.	
591-78-6	2-Hexanone	9.3	U
124-48-1	Dibromochloromethane	4.7	U
106-93-4	1,2-Dibromoethane	4.7	U
108-90-7	Chlorobenzene	4.7	U
100-41-4	Ethylbenzene	4.7	U
95-47-6	o-Xylene	4.7	U
179601-23-1	m,p-Xylene	4.7	U
100-42-5	Styrene	4.7	U
75-25-2	Bromoform	4.7	U
98-82-8	Isopropylbenzene	4.7	U
79-34-5	1,1,2,2-Tetrachloroethane	4.7	U
541-73-1	1,3-Dichlorobenzene	4.7	U
106-46-7	1,4-Dichlorobenzene	4.7	U
95-50-1	1,2-Dichlorobenzene	4.7	U
96-12-8	1,2-Dibromo-3-chloropropane	4.7	U
120-82-1	1,2,4-Trichlorobenzene	4.7	U
87-61-6	1,2,3-Trichlorobenzene	4.7	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W22

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028001

Sample wt/vol: 6.15 (g/mL) g Lab File ID: SA99C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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SOM01.2 (6/2007)

1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W27

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028002

Sample wt/vol: 6.11 (g/mL) g Lab File ID: SB00C002

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	4.7	U
74-87-3	Chloromethane	4.7	U
75-01-4	Vinyl chloride	4.7	U
74-83-9	Bromomethane	4.7	U
75-00-3	Chloroethane	4.7	U
75-69-4	Trichlorofluoromethane	4.7	U
75-35-4	1,1-Dichloroethene	4.7	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.7	U
67-64-1	Acetone	9.4	U
75-15-0	Carbon disulfide	4.7	U
79-20-9	Methyl acetate	4.7	U
75-09-2	Methylene chloride	4.7 ~~0.31~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	4.7	U
1634-04-4	Methyl tert-butyl ether	4.7	U
75-34-3	1,1-Dichloroethane	4.7	U
156-59-2	cis-1,2-Dichloroethene	4.7	U
78-93-3	2-Butanone	9.4	U
74-97-5	Bromochloromethane	4.7	U
67-66-3	Chloroform	4.7	U
71-55-6	1,1,1-Trichloroethane	4.7	U
110-82-7	Cyclohexane	4.7	U
56-23-5	Carbon tetrachloride	4.7	U
71-43-2	Benzene	4.7	U
107-06-2	1,2-Dichloroethane	4.7	U
123-91-1	1,4-Dioxane	94.	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W27

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ____ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028002

Sample wt/vol: 6.11 (g/mL) g Lab File ID: SB00C002

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	4.7	U
108-87-2	Methylcyclohexane	4.7	U
78-87-5	1,2-Dichloropropane	4.7	U
75-27-4	Bromodichloromethane	4.7	U
10061-01-5	cis-1,3-Dichloropropene	4.7	U
108-10-1	4-Methyl-2-Pentanone	9.4	U
108-88-3	Toluene	4.7 ~~0.16~~	~~JB~~ U
10061-02-6	trans-1,3-Dichloropropene	4.7	U
79-00-5	1,1,2-Trichloroethane	4.7	U
127-18-4	Tetrachloroethene	5.9	
591-78-6	2-Hexanone	9.4	U
124-48-1	Dibromochloromethane	4.7	U
106-93-4	1,2-Dibromoethane	4.7	U
108-90-7	Chlorobenzene	4.7	U
100-41-4	Ethylbenzene	4.7	U
95-47-6	o-Xylene	4.7	U
179601-23-1	m,p-Xylene	4.7	U
100-42-5	Styrene	4.7	U
75-25-2	Bromoform	4.7	U
98-82-8	Isopropylbenzene	4.7	U
79-34-5	1,1,2,2-Tetrachloroethane	4.7	U
541-73-1	1,3-Dichlorobenzene	4.7	U
106-46-7	1,4-Dichlorobenzene	4.7	U
95-50-1	1,2-Dichlorobenzene	4.7	U
96-12-8	1,2-Dibromo-3-chloropropane	4.7	U
120-82-1	1,2,4-Trichlorobenzene	4.7	U
87-61-6	1,2,3-Trichlorobenzene	4.7	U

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1J - FORM I VOA-TIC
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W27

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028002

Sample wt/vol: 6.11 (g/mL) g Lab File ID: SB00C002

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
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29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

24

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W32

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028003

Sample wt/vol: 5.24 (g/mL) g Lab File ID: SB01C003

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 7.0 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	5.1	U
74-87-3	Chloromethane	5.1	U
75-01-4	Vinyl chloride	5.1	U
74-83-9	Bromomethane	5.1	U
75-00-3	Chloroethane	5.1	U
75-69-4	Trichlorofluoromethane	5.1	U
75-35-4	1,1-Dichloroethene	5.1	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5.1	U
67-64-1	Acetone	10.	U
75-15-0	Carbon disulfide	5.1	U
79-20-9	Methyl acetate	5.1	U
75-09-2	Methylene chloride	5.1 ~~0.34~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	5.1	U
1634-04-4	Methyl tert-butyl ether	5.1	U
75-34-3	1,1-Dichloroethane	5.1	U
156-59-2	cis-1,2-Dichloroethene	5.1	U
78-93-3	2-Butanone	10.	U
74-97-5	Bromochloromethane	5.1	U
67-66-3	Chloroform	5.1	U
71-55-6	1,1,1-Trichloroethane	5.1	U
110-82-7	Cyclohexane	5.1	U
56-23-5	Carbon tetrachloride	5.1	U
71-43-2	Benzene	5.1	U
107-06-2	1,2-Dichloroethane	5.1	U
123-91-1	1,4-Dioxane	100	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W32

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ________ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028003

Sample wt/vol: 5.24 (g/mL) g Lab File ID: SB01C003

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 7.0 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	0.13	J
108-87-2	Methylcyclohexane	5.1	U
78-87-5	1,2-Dichloropropane	5.1	U
75-27-4	Bromodichloromethane	5.1	U
10061-01-5	cis-1,3-Dichloropropene	5.1	U
108-10-1	4-Methyl-2-Pentanone	10.	U
108-88-3	Toluene	5.1 ~~0.19~~	~~JB~~ U
10061-02-6	trans-1,3-Dichloropropene	5.1	U
79-00-5	1,1,2-Trichloroethane	5.1	U
127-18-4	Tetrachloroethene	1.0	J
591-78-6	2-Hexanone	10.	U
124-48-1	Dibromochloromethane	5.1	U
106-93-4	1,2-Dibromoethane	5.1	U
108-90-7	Chlorobenzene	5.1	U
100-41-4	Ethylbenzene	5.1	U
95-47-6	o-Xylene	5.1	U
179601-23-1	m,p-Xylene	5.1	U
100-42-5	Styrene	5.1	U
75-25-2	Bromoform	5.1	U
98-82-8	Isopropylbenzene	5.1	U
79-34-5	1,1,2,2-Tetrachloroethane	5.1	U
541-73-1	1,3-Dichlorobenzene	5.1	U
106-46-7	1,4-Dichlorobenzene	5.1	U
95-50-1	1,2-Dichlorobenzene	5.1	U
96-12-8	1,2-Dibromo-3-chloropropane	5.1	U
120-82-1	1,2,4-Trichlorobenzene	5.1	U
87-61-6	1,2,3-Trichlorobenzene	5.1	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W32

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028003

Sample wt/vol: 5.24 (g/mL) g Lab File ID: SB01C003

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 7.0 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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1A - FORM I VOA-1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W57

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028004

Sample wt/vol: 6.36 (g/mL) g Lab File ID: SB02C004

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	4.5	U
74-87-3	Chloromethane	4.5	U
75-01-4	Vinyl chloride	4.5	U
74-83-9	Bromomethane	4.5	U
75-00-3	Chloroethane	4.5	U
75-69-4	Trichlorofluoromethane	4.5	U
75-35-4	1,1-Dichloroethene	4.5	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4.5	U
67-64-1	Acetone	9.1	U
75-15-0	Carbon disulfide	4.5	U
79-20-9	Methyl acetate	4.5	U
75-09-2	Methylene chloride	4.5 ~~0.23~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	4.5	U
1634-04-4	Methyl tert-butyl ether	4.5	U
75-34-3	1,1-Dichloroethane	4.5	U
156-59-2	cis-1,2-Dichloroethene	5.9	
78-93-3	2-Butanone	9.1	U
74-97-5	Bromochloromethane	4.5	U
67-66-3	Chloroform	4.5	U
71-55-6	1,1,1-Trichloroethane	4.5	U
110-82-7	Cyclohexane	4.5	U
56-23-5	Carbon tetrachloride	4.5	U
71-43-2	Benzene	4.5	U
107-06-2	1,2-Dichloroethane	4.5	U
123-91-1	1,4-Dioxane	91.	~~U~~ R

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SOM01.2 (6/2007)

1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W57

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028004

Sample wt/vol: 6.36 (g/mL) g Lab File ID: SB02C004

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	1.0	J
108-87-2	Methylcyclohexane	4.5	U
78-87-5	1,2-Dichloropropane	4.5	U
75-27-4	Bromodichloromethane	4.5	U
10061-01-5	cis-1,3-Dichloropropene	4.5	U
108-10-1	4-Methyl-2-Pentanone	9.1	U
108-88-3	Toluene	4.5 ~~0.17~~	~~JB~~ U
10061-02-6	trans-1,3-Dichloropropene	4.5	U
79-00-5	1,1,2-Trichloroethane	4.5	U
127-18-4	Tetrachloroethene	27.	
591-78-6	2-Hexanone	9.1	U
124-48-1	Dibromochloromethane	4.5	U
106-93-4	1,2-Dibromoethane	4.5	U
108-90-7	Chlorobenzene	4.5	U
100-41-4	Ethylbenzene	4.5	U
95-47-6	o-Xylene	4.5	U
179601-23-1	m,p-Xylene	4.5	U
100-42-5	Styrene	4.5	U
75-25-2	Bromoform	4.5	U
98-82-8	Isopropylbenzene	4.5	U
79-34-5	1,1,2,2-Tetrachloroethane	4.5	U
541-73-1	1,3-Dichlorobenzene	4.5	U
106-46-7	1,4-Dichlorobenzene	4.5	U
95-50-1	1,2-Dichlorobenzene	4.5	U
96-12-8	1,2-Dibromo-3-chloropropane	4.5	U
120-82-1	1,2,4-Trichlorobenzene	4.5	U
87-61-6	1,2,3-Trichlorobenzene	4.5	U

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1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W57

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: ______ SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8177028004

Sample wt/vol: 6.36 (g/mL) g Lab File ID: SB02C004

Level: (TRACE/LOW/MED) LOW Date Received: 06/25/2008

% Moisture: not dec. 13. Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1] EPA-designated Registry Number.

40

1A - FORM I VOA-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W58

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8179015001

Sample wt/vol: 4.09 (g/mL) g Lab File ID: SB03C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. 7.3 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
75-71-8	Dichlorodifluoromethane	6.6	U
74-87-3	Chloromethane	6.6	U
75-01-4	Vinyl chloride	6.6	U
74-83-9	Bromomethane	6.6	U
75-00-3	Chloroethane	6.6	U
75-69-4	Trichlorofluoromethane	6.6	U
75-35-4	1,1-Dichloroethene	6.6	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	6.6	U
67-64-1	Acetone	13.	U
75-15-0	Carbon disulfide	6.6	U
79-20-9	Methyl acetate	6.6	U
75-09-2	Methylene chloride	6.6 ~~0.36~~	~~JB~~ U
156-60-5	trans-1,2-Dichloroethene	6.6	U
1634-04-4	Methyl tert-butyl ether	6.6	U
75-34-3	1,1-Dichloroethane	6.6	U
156-59-2	cis-1,2-Dichloroethene	6.6	U
78-93-3	2-Butanone	13.	U
74-97-5	Bromochloromethane	6.6	U
67-66-3	Chloroform	6.6	U
71-55-6	1,1,1-Trichloroethane	6.6	U
110-82-7	Cyclohexane	6.6	U
56-23-5	Carbon tetrachloride	6.6	U
71-43-2	Benzene	6.6	U
107-06-2	1,2-Dichloroethane	6.6	U
123-91-1	1,4-Dioxane	130	~~U~~ R

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1B - FORM I VOA-2

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B4W58

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8179015001

Sample wt/vol: 4.09 (g/mL) g Lab File ID: SB03C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. 7.3 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Purge Volume: 10.0 (mL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
79-01-6	Trichloroethene	6.6	U
108-87-2	Methylcyclohexane	6.6	U
78-87-5	1,2-Dichloropropane	6.6	U
75-27-4	Bromodichloromethane	6.6	U
10061-01-5	cis-1,3-Dichloropropene	6.6	U
108-10-1	4-Methyl-2-Pentanone	13.	U
108-88-3	Toluene	6.6 ~~0.22~~	~~JB~~ U
10061-02-6	trans-1,3-Dichloropropene	6.6	U
79-00-5	1,1,2-Trichloroethane	6.6	U
127-18-4	Tetrachloroethene	6.6	U
591-78-6	2-Hexanone	13.	U
124-48-1	Dibromochloromethane	6.6	U
106-93-4	1,2-Dibromoethane	6.6	U
108-90-7	Chlorobenzene	6.6	U
100-41-4	Ethylbenzene	6.6	U
95-47-6	o-Xylene	6.6	U
179601-23-1	m,p-Xylene	6.6	U
100-42-5	Styrene	6.6	U
75-25-2	Bromoform	6.6	U
98-82-8	Isopropylbenzene	6.6	U
79-34-5	1,1,2,2-Tetrachloroethane	6.6	U
541-73-1	1,3-Dichlorobenzene	6.6	U
106-46-7	1,4-Dichlorobenzene	6.6	U
95-50-1	1,2-Dichlorobenzene	6.6	U
96-12-8	1,2-Dibromo-3-chloropropane	6.6	U
120-82-1	1,2,4-Trichlorobenzene	6.6	U
87-61-6	1,2,3-Trichlorobenzene	6.6	U

1J - FORM I VOA-TIC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B4W58

Lab Name: DataChem Laboratories, Inc. Contract: EP-W-05-026

Lab Code: DATAC Case No.: 37626 Mod. Ref No.: SDG No.: B4W22

Matrix: (SOIL/SED/WATER) SOIL Lab Sample ID: 8179015001

Sample wt/vol: 4.09 (g/mL) g Lab File ID: SB03C001

Level: (TRACE/LOW/MED) LOW Date Received: 06/27/2008

% Moisture: not dec. 7.3 Date Analyzed: 07/02/2008

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg Purge Volume: 10.0 (mL)

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
	E966796[1]	Total Alkanes	N/A		

[1]EPA-designated Registry Number.

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DATA CHEM LABORATORIES, INC.

SDG Narrative
Low/Medium Volatiles

Contract: EPW05026
Laboratory: DataChem Laboratories

Case: 37626
SDG: B4W22

EPA No.	DCL Sample	pH	Dilution	EPA No.	DCL Sample	pH	Dilution
B4W22	8177028001	NA	None	B4W57	8177028004	NA	None
B4W27	8177028002	NA	None	B4W58	8179015001	NA	None
B4W32	8177028003	NA	None				

General SDG Information: Samples were analyzed according to USEPA CLP Statement of Work SOM01.2. There were no modifications except as listed below.

Instrumentation: Hewlett Packard 5972-S GC/MSD with electron impact ionization and quadrupole detector scanning a mass range of 35 to 300 amu. Column: J&W Scientific DB 624 (75 m, 0.53 mm id, 3 µm film). Purge & Trap: Tekmar LSC 2000 Concentrator (Vocarb trap) with Varian Archon Autosampler. Carrier and Purge Gas: Helium. Purge Flow: ~35 mL/min. at ambient. Temperature Program: 35°C (2.0 min.) 9°/min. to 180° (0.0 min.) 45°/min. to 220°.

Sample Preparation: This method has no extraction procedure for the low soil matrix. Soils were received in sample cartridges which were extruded and frozen until analysis. Prior to analysis, a total of 10 mL of reagent water containing internal standard/ DMC solution was added and the sample was purged.

Instrument Calibration: The GC/MS was hardware tuned to meet the criteria for a 50 ng purging of 4-bromofluorobenzene as specified in the SOW. This tune is valid for 12 hours.

Initial Calibration and Calibration Verification: The five point initial calibration curve met the specified criteria in the SOW with the exception of the dioxane compounds. All calibration verification standards met method specified criteria (again excepting dioxanes). Due to interfering ions, the secondary 55 ion was used in quantifying methylcyclohexane for all analyses. Any manual integration is noted by an "m" footnote on the quantitation report and a graphics page was included to show peak integration. Analytes which required a manual integration are summarized:

Sample	Initial Scan	Final Scan	Analyte
VSTD005SS	73	103	chloromethane

Blank Analysis: Method blanks were prepared using 5.0 g of Ottawa Sand and or reagent water spiked with internal standard/DMC solution. All blanks were free of volatile organic contaminants within the specifications of the method.

Sample Analysis: All deuterated monitoring compounds and internal standard area responses were within the required acceptance criteria unless otherwise noted on forms II and VIII. All samples were analyzed within ten days of verified sample receipt.

MS/MSD Analysis: MS/MSD analyses were not required for this SDG.

Sample Calculations: All symbols are defined in section 8.3 of DCL SOP OV-EP-SOM and section 11.2 of SOM01.2. RRF = $(A_xC_{is})/(A_{is}C_x)$; Water Concentration = $(A_xI_sDF)/(V_oA_{is}\underline{RRF})$; Soil Conc.= $(A_xI_sDF)/(DW_sA_{is}\underline{RRF})$; Medium Level Conc. = $(A_xI_sAV_tDF)/(A_{is}\underline{RRF}V_aW_sD)$.

Miscellaneous Comments: As per the SOW, alkanes were not reported separately but rather were reported as "total alkanes." With regard to the naming of tentatively identified compounds (TICs), spectral matches above 85 percent are reported as a specific isomer unless the analyst has reason to assign a different name. Reasons include but are not limited to previous experience with the compound or an instance where the retention time clearly indicates that a computer generated match is in fact not the compound in question. A specific compound name may be assigned to more than one peak. In any case, TIC naming is tentative and it cannot be assumed that reported compounds and specific isomers are correct.

I certify that this sample data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy sample data package and in the electronic data deliverable has been authorized by the laboratory manager or the manager's designee, as verified by the following signature.

7.16.08

Christopher Q. Coleman
Chemist
Volatile Organic Analysis Section

RECEIVED
JUL 17 2008
HAZ. WASTE SUPPORT SEC.

Sample Delivery Group (SDG) Cover Sheet

SDG Number: B4W22

☐ ARO ☐ PEST ☐ BNA ☐ BNASIM ☐ VT ☐ VOASIM ☒ VLM

Laboratory Name: DataChem Laboratories, Inc.

Laboratory Code: DATAC

Contract No.: EP-W-05-026

Case No.: 37626

Analysis Price: N/A

SDG Turnaround: 21

Modified Analysis (if applicable):

Modification Reference No.: N/A

EPA Sample Numbers in SDG (Listed in Numerical Order)

1) B4W22	7)	13)	19)
2) B4W27	8)	14)	20)
3) B4W32	9) MR 7/1/08	15) MR 7/1/08	21) MR 7/1/08
4) B4W57	10)	16)	22)
5) B4W58	11)	17)	23)
6) MR 7/1/08	12)	18)	24)

B4W22	B4W58
First Sample in SDG	Last Sample in SDG
06/25/08	06/27/08
First Sample Receipt Date	Last Sample Receipt Date

Note: *There are a maximum of 20 field samples (excluding PE samples) in an SDG. Attach the TR/COC records to this form in alphanumeric order (the order listed above on this form).*

Signature: Meridith Edward

Date: 7/1/2008

3

Edwards, Meredith D.

From: Olson, Roxanne
Sent: Wednesday, June 25, 2008 11:35 AM
To: Edwards, Meredith D.
Subject: FW: Region 02 | Case 37626 | Lab DATAC | Issue Documentation | FINAL

Attachments: 2008062510330026.pdf

2008062510330026.pdf (249 KB)

-----Original Message-----
From: Von Moll, Kristin [mailto:kvonmoll@fedcsc.com]
Sent: Wednesday, June 25, 2008 11:40 AM
To: Olson, Roxanne
Cc: Adly Michael; Jennifer Ferranda
Subject: Region 02 | Case 37626 | Lab DATAC | Issue Documentation | FINAL

Roxy,

Summary Start
-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC does not list a Case number. SMO believes that these samples are for Case 37626.
Resolution 1: Per Region 2, the correct Case number should be 37626.
The issue should be noted in the SDG Narrative.

-Insufficient/inappropriate designation of laboratory QC- Issue 2: There are samples designated for laboratory QC. Per scheduling laboratory QC is not required for this Case.
Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples. This Region only requires laboratory QC on the Pest and/or ARO fraction for Organics.
Summary End

Please let me know if you have any questions.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

-----Original Message-----
From: Michael.Adly@epamail.epa.gov [mailto:Michael.Adly@epamail.epa.gov]

Sent: Wednesday, June 25, 2008 1:31 PM
To: Von Moll, Kristin
Cc: feranda.jennifer@epa.gov
Subject: Re: NEW ISSUE #31 | Case 37626 | Lab DATAC | Issue Documentation

Kristin,

Issue 1 Yes, the correct case number is 37626.

Issue 2 the answer provided is correct and acceptable.

Thanks.

Adly A. Michael
Region 2 - HWSB - HWSS
Phone: (732) 906-6161
Fax: (732) 321-6622

"Von Moll, Kristin" <kvonmoll@fedcsc.com>

06/25/2008 01:27 PM

To
Adly Michael/R2/USEPA/US@EPA, Jennifer Feranda/R2/USEPA/US@EPA

cc

Subject
NEW ISSUE #31 | Case 37626 | Lab DATAC | Issue Documentation

Hi Adly,

DATAC is reporting the following issues regarding Case 37626. I mentioned this to you this morning about the fax we received here at SMO that was addressed to you. The fax cover page has Case 37626 written on it; however, the TR does not list a Case number.

-Discrepancies with tags, jars, and/or TR/COC- Issue 1: The TR/COC does not list a Case number. SMO believes that these samples are for Case 37626.

-Insufficient/inappropriate designation of laboratory QC- Issue 2: There are samples designated for laboratory QC. Per scheduling laboratory QC is not required for this Case. Resolution 2: In accordance with previous direction from Region 2, the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples. This Region only requires laboratory QC on the Pest and/or ARO fraction for Organics.

Please advise on what the correct Case number should be. Can you also please advise if the resolution in issue 2 can be applied to any future shipments for this Case that designate a VOA sample for lab QC.

Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

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use of e-mail for such purpose.

-----Original Message-----
From: Olson, Roxanne [mailto:olsonr@datachem.com]
Sent: Wednesday, June 25, 2008 1:10 PM
To: Von Moll, Kristin
Subject: FW: DCL Scanned Image Sender V4.2

Kristin: Here is the TR for the samples we received today for case ???? Are you correct in your assumption?

Roxy

From: Von Moll, Kristin
Sent: Wednesday, June 25, 2008 11:06 AM
To: Roxy Olson
Subject: Region 02 | Case 37626

Hi Roxy,

There are some samples that you should be receiving today under airbill 849381325393. It looks like the TR may not have a Case number on it and there are samples designated for VOA lab QC. I believe these samples are likely for Case 37626.

Please send me a copy of the TR when these samples are received and let me know if there are any other issues.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

(See attached file: 2008062510330026.pdf)

Edwards, Meredith D.

From: Olson, Roxanne
Sent: Friday, June 27, 2008 8:16 AM
To: Edwards, Meredith D.
Subject: FW: Case 37626

From: Von Moll, Kristin [mailto:kvonmoll@fedcsc.com]
Sent: Friday, June 27, 2008 7:57 AM
To: Olson, Roxanne
Subject: Case 37626

Hi Roxy,

It looks like another set of samples were shipped for Case 37626 without a Case number. They were shipped under airbill 849381325408 and you should be receiving them today.

Please let me know when you receive these samples and if there are any other issues associated with them.
Thanks,

Kristin Von Moll
Environmental Coordinator
kvonmoll@fedcsc.com
Computer Sciences Corporation
1-703-818-4235

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 37626
LABORATORY: DataChem Laboratories
SAMPLER: NJDEP

SDG Nos.: B4TY5, B4TY7, B4W22
SITE: Former Stop & Wash
ANALYSIS: VOA

DATA ASSESSMENT

The current SOP HW-33/VOA (Revision 1) August 2007, USEPA Region II Data Validation SOP for Statement of Work SOM01.2 for evaluating organic data has been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material), "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: R. J. Shelley Raxa J Shelley Date: August/05/2008

Peer Reviewer's Signature: Date: 08 / 06 /2008

Verified By: Date: 08 / 07 /2008

SDG# B4TY5

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

No problems found for this qualification.

2. DMC's

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are not qualified.

1,4-Dioxane-d8 B4TY5, B4TY6, B4W14, B4W15, B4W16, B4W18, B4W19, B4W20, B4W23, B4W24, B4W25, B4W28, B4W29, B4W30, B4W49, B4W54, VBLKW2, VHBLKW1
1,4-Dioxane

The following volatile samples have DMC/SMC recoveries below the lower limit of the criteria window but greater than or equal to 20%. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

trans-1,3-Dichloropropene-d4 B4W30
cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, 1,1,2-Trichloroethane

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

Not Applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U".

The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
No additional qualification applied due to method blank contamination.

B) Field or rinse blank contamination:
No additional qualification applied due to field blank contamination.

C) Trip blank contamination for VOA aqueous samples:
No problems found for this qualification.

D) Storage Blank associated with VOA samples only:
No problems found for this qualification.

E) Tics "R" rejected: None.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene.

If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems found for this qualification.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

The following volatile samples are associated with an initial/ continuing/ closing calibration with relative response factors (RRFs) outside criteria. The following samples are non-detected for 1,4-Dioxane. Non detected compounds are qualified "R".

1,4-Dioxane B4TY5, B4TY6, B4W14, B4W15, B4W16, B4W18, B4W19, B4W20, B4W23, B4W24, B4W25, B4W28, B4W29, B4W30, B4W49, B4W54, VBLKW1, VBLKW2, VHBLKW1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific

compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R".

The following analytes in the sample shown were qualified for %RSD and %D:

The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Non-detected compounds are not qualified.

Bromomethane
B4TY5, B4TY6, B4W14, B4W15, B4W16, B4W18, B4W19, B4W20, B4W23, B4W24, B4W25, B4W28, B4W29, B4W30, B4W49, B4W54, VBLKW1, VBLKW2, VHBLKW1

The following volatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

1,4-Dioxane
B4TY5, B4TY6, B4W14, B4W15, B4W16, B4W18, B4W19, B4W20, B4W23, B4W24, B4W25, B4W28, B4W29, B4W30, B4W49, B4W54, VBLKW1, VBLKW2, VHBLKW1

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

No problems found for this qualification.

8. COMPOUND IDENTIFICATION:

A) Volatile Fraction:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard

compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

No problems found for this qualification.

9. **CONTRACT PROBLEMS NON-COMPLIANCE:**

1, 4-Dioxane:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

1, 4-Dioxane-d8:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

Bromomethane:
Percent relative standard deviation (%RSD) fell outside Contractual Criteria in the initial Calibration.

10. **FIELD DOCUMENTATION:** No problems.

11. **OTHER PROBLEMS:** None.

12. **This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified NOT to be used.**
None.

SDG# B4TY7

1. **HOLDING TIME:**

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

No problems found for this qualification.

2. **DMC's**

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

The following volatile samples have DMC/SMC recoveries above the upper limit of the criteria window. Detected compounds are qualified J. Non-detected compounds are not qualified.

1,4-Dioxane-d8 B4TY7, B4TY8, B4TZ0, B4TZ1, B4TZ2, B4TZ4, B4W02, B4W03, B4W04, B4W06, B4W07, B4W08, B4W10, B4W11, B4W12, B4W33, B4W45, B4W50, VBLKW1, VHBLKW1
1,4-Dioxane

The following volatile samples have DMC/SMC recoveries below the lower limit of the criteria window but greater than or equal to 20%. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

2-Butanone-d5 B4T20
Acetone, 2-Butanone

3. **MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:**

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

Not Applicable.

4. **BLANK CONTAMINATION:**

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2

times for common contaminants), the analytes are qualified as non-detects, "U".

The following analytes in the sample shown were qualified with "U" for these reasons:

A) **Method blank contamination:**
No problems found for this qualification.

B) **Field or rinse blank contamination:**
The following volatile samples have analyte concentrations reported less than the CRQL. The associated field blank concentration is less than the CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Carbon disulfide B4TZ2, B4TZ4

C) **Trip blank contamination for VOA aqueous samples:**
No problems found for this qualification.

D) **Storage Blank associated with VOA samples only:**
No problems found for this qualification.

E) **Tics "R" rejected**: None.

5. **MASS SPECTROMETER TUNING:**

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene.

If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems found for this qualification.

6. **CALIBRATION:**

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) **Response Factor GC/MS:**

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

The following volatile samples are associated with an initial/ continuing/ closing calibration with relative response factors (RRFs) outside criteria. The following samples are non-detected for 1,4-Dioxane. Non detected compounds are qualified "R".

1,4-Dioxane B4TY7, B4TY8, B4TZ0, B4TZ1, B4TZ2, B4TZ4, B4W02, B4W03, B4W04, B4W06, B4W07, B4W08, B4W10, B4W11, B4W12, B4W33, B4W45, B4W50, VBLKW1, VBLKW2, VHBLKW1

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R".

The following analytes in the sample shown were qualified for %RSD and %D:

The following volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. Detected compounds are qualified J. Non-detected compounds are not qualified.

Bromomethane
B4TY7, B4TY8, B4TZ0, B4TZ1, B4TZ2, B4TZ4, B4W02, B4W03, B4W04, B4W06, B4W07, B4W08, B4W10, B4W11, B4W12, B4W33, B4W45, B4W50, VBLKW1, VBLKW2, VHBLKW1

The following volatile samples are associated with an opening or closing CCV percent difference (%D) outside criteria. Detected compounds are qualified J. Non-detected compounds are qualified UJ.

1,4-Dioxane
B4TY7, B4TY8, B4TZ0, B4TZ1, B4TZ2, B4TZ4, B4W02, B4W03, B4W04, B4W06, B4W07, B4W08, B4W10, B4W11, B4W12, B4W33, B4W45, B4W50, VBLKW1, VBLKW2, VHBLKW1

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

No problems found for this qualification.

8. COMPOUND IDENTIFICATION:

A) Volatile Fraction:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

No problems found for this qualification.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

1, 4-Dioxane:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

1, 4-Dioxane-d8:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

Bromomethane:
Percent relative standard deviation (%RSD) fell outside Contractual Criteria in the initial Calibration.

10. FIELD DOCUMENTATION: No problems.

11. OTHER PROBLEMS: Sample B4W45 was taken as a field duplicate of water sample B4W10. Carbon disulfide is detected in sample B4W10 (7.4 ug/L) and not detected in sample B4W45 (0.35J).

12. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified NOT to be used.
None.

SDG# B4W22

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

No problems found for this qualification.

2. DMC's

All samples are spiked with surrogate compounds (DMC's) prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

No problems found for this qualification.

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

Not Applicable.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination, which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 1 times the blank contaminant level (2 times for common contaminants), the analytes are qualified as non-detects, "U".

The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:

The following volatile samples have common contaminant analyte concentrations reported less than 2x the CRQL. The associated method blank common contaminant concentration is less than 2x the CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Methylene chloride B4W22, B4W27, B4W32, B4W57, B4W58

The following volatile samples have analyte concentrations reported less than the CRQL. The associated method blank concentration is less than the CRQL. Detected compounds are qualified U. Non-detected compounds are not qualified. Reported sample concentrations have been elevated to the CRQL.

Toluene B4W22, B4W27, B4W32, B4W57, B4W58

B) **Field or rinse blank contamination:**
No additional qualification applied due to field blank contamination.

C) **Trip blank contamination for VOA aqueous samples:**
No problems found for this qualification.

D) **Storage Blank associated with VOA samples only:**
No additional qualification applied due to storage blank contamination.

E) **Tics "R" rejected**: None.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene.

If the mass calibration is in error, all associated data will be classified as unusable "R".

No problems found for this qualification.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) **Response Factor GC/MS:**

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05, and ≥ 0.01 for the twenty-two analytes with poor response in both the initial and continuing calibrations. A value < 0.05, or < 0.01 for the poor performers indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

The following volatile samples are associated with an initial/ continuing/ closing calibration with relative response factors (RRFs) outside criteria. The following samples are non-detected for 1,4-Dioxane. Non detected compounds are qualified "R".

1,4-Dioxane B4W22, B4W27, B4W32, B4W57, B4W58, VBLKS1, VHBLKS1

B) **Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):**

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific

compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 20%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. %D must be < 25%, < 40% for the poor performers, and < 50% for 1,4-Dioxane. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria (> 90%), non-detects data may be qualified "R".

The following analytes in the sample shown were qualified for %RSD and %D:

No problems found for this qualification.

7. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +200%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than 30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +200%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

No problems found for this qualification.

8. COMPOUND IDENTIFICATION:

A) Volatile Fraction:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within 0.06 RRT units of the standard compound and have ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

No problems found for this qualification.

9. CONTRACT PROBLEMS NON-COMPLIANCE:

1, 4-Dioxane:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

1, 4-Dioxane-d8:
Average response factor (RRF) is below the Contractual Criteria in the initial Calibration. Continuing

response factor (RRF50.0) is below the contractual criteria in all the opening and closing CCV calibrations.

10. **FIELD DOCUMENTATION:** No problems.

11. **OTHER PROBLEMS:** None.

12. **This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified NOT to be used.**
None.

SOP HW-33/VOA
Revision 1
August 2007

USEPA Contract Laboratory Program
Statement of Work for Organic Analysis of Low/Medium Concentration of VolatileOrganic Compounds SOM01.2
Data Validation

Prepared by: George Karras Date: 8/13/07
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Annual Review

Reviewed by: ____________________ Date: ________
Name

Reviewed by: ____________________ Date: ________
Name

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INTRODUCTION

Scope and Applicability

This SOP offers detailed guidance in evaluating laboratory data generated according to the method in the "USEPA Contract Laboratory Program Statement of Work for Organics Analysis Multi-Media, Multi-Concentration, SOM01.1, May 2005". The validation procedures and actions discussed in this document are based on the requirements set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, January 2005". This document attempts to cover technical problems specific to low/Medium concentration of volatile compounds. Situations may arise where data limitations must be assessed based on the reviewer's own professional judgement.

In addition to technical requirements, contractual requirements may also be covered in this document. While it is important that instances of contract non-compliance be addressed in the Data Assessment, the technical criteria are always used to qualify the analytical data.

Summary

To ensure a thorough evaluation of each result in a data case, the reviewer must complete the checklist within this SOP, answering specific questions while performing the prescribed "ACTIONS" in each section. Qualifiers (or flags) are applied to questionable or unusable results as instructed. The data qualifiers discussed in this document are as follows:

Data Qualifiers

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."

JN - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Lab Qualifiers:

D - The positive value is the result of an analysis at a secondary dilution factor.

B - The analyte is present in the associated method blank as well as in the sample. This qualifier has a different meaning when validating inorganic data.

E - The concentration of this analyte exceeds the calibration range of the instrument.

P - Pesticide/Aroclor target analytes when the % Difference between the analyte concentrations obtained from the two dissimilar GC columns is greater than 25%.

The reviewer must prepare a detailed data assessment to be submitted along with the completed SOP checklist. The Data Assessment must list all data qualifications, reasons for qualifications, instances of missing data and contract non-compliance.

Reviewer Qualifications:

Data reviewers must possess a working knowledge of the USEPA Statement of Work SOM01.2 and National Functional Guidelines mentioned above.

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 37626 LAB: DataChem Laboratories.

SITE NAME: Forme Stop & Wash SDG No(s).: B4TY5, B4TY7, B4W22

1.0 Chain of Custody and Sampling Trip Reports

		YES	NO	N/A
1.1	Are the Traffic Reports/Chain-of-Custody Records present for all samples?	[✓]		

ACTION: If no, contact RSCC, or the TOPO to obtain replacement of missing or illegible copies from the lab.

		YES	NO	N/A
1.2	Is the Sampling Trip Report present for all samples?	[✓]		

ACTION: If no, contact either RSCC or ask the TOPO to obtain the necessary information from the prime contractor.

2.0 Data Completeness and Deliverables

		YES	NO	N/A
2.1	Have any missing deliverables been received and added to the data package?		[✓]	

ACTION: Contact the TOPO to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment.

		YES	NO	N/A
2.2	Was CLASS CCS checklist included with the package?	[✓]		

		YES	NO	N/A
2.3	Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, and Sampling Trip Report?	___	[✓]	___

ACTION: If yes, contact the TOPO to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

3.0 Cover Letter SDG Narrative

		YES	NO	N/A
3.1	Is the SDG Narrative or Cover Letter Present?	[✓]	___	___
3.2	Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.5.1)? EPA sample numbers in the SDG, detailed documentation of any quality control, sample, shipment, and/or analytical problems encountered in processing the samples? Corrective action taken?	[✓]	___	___
3.3	Does the Narrative contain the following information SOM01.1, page B-12, section 2.5.1)? Description of trap, column used, storage of samples, case#, SDG#, analytical problems, and discrepancies between field and lab weights.	[✓]	___	___
3.4	Does the narrative, VOA section, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	___	✓
3.5	Did the contractor record the temperature of the cooler on the Form DC-1, Item 9 - Cooler Temperature, and in the SDG Narrative?	[✓]	___	___
3.6	Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-13, section 2.5.1.2)?	[✓]	___	* ✓

* For SDG#B4W22

	YES	NO	N/A
3.7 Does the Case Narrative contain the "verbatim" statement (page B-12, section 2.5.1 of the SOM)?	[✓]	___	___

ACTION: If "No", to any question in this section, contact the TOPO to obtain necessary resubmittals. If unavailable, document under the Contract Problems/ Non-Compliance section of the Data Assessment.

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOM reporting requirements, section 2.1, page B-10):

	YES	NO	N/A
a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]	___	___
b. Are all forms and copies legible?	[✓]	___	___
c. Assembled in the order set forth in the SOW?	[✓]	___	___
Low/Med Concentration Volatiles Data present?	[✓]	___	

Action: Take action as specified in section 3.7 above.

PART A: Low/Medium Volatile ANALYSES

1.0 Sample Conditions/Problems

	YES	NO	N/A
1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data?	___	[✓]	___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the

YES NO N/A

cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

2.2 Preservation: Aqueous samples must be preserved with HCL to pH of 2 or below and cooled at 4°C ± 2°C. Non-aqueous samples: frozen (less than -7°C) or properly cooled (4°C ± 2°C) and preserved with $NaHSO_4$.

Action: Qualify sample results according to the following table.

Holding Time Actions for Low/Medium Volatile Analyses

Matrix	Preserved	Criteria	ACTION	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤ 7 Days	NO Action	
	No	> 7 Days	J	R
	Yes	≤ 14 Days	No Action	
	Yes	> 14 Days	J	R
Non-Aqueous	No	≤ 14 Days	J	R
	Yes	≤ 14 Days	No Action	
	Yes/No	> 14 Days	J	R

3.0 Deuterated Monitoring Compound (DMC) Recovery (Form II)

	YES	NO	N/A
3.1 Are the Volatile SMC Recovery Summaries (Form II present?	[✓]		

ACTION: Contact the TOPO to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

	YES	NO	N/A
3.2 Were outliers marked correctly with an asterisk?	[✓]		✓ *

* For Sple # B4W22

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Were more than three of the fourteen (14) Deuterated Monitoring Compounds (DMC's) recoveries outside their corresponding limits?		[✓]	
If yes, were samples re-analyzed?	[ ]		✓
Were method blanks re-analyzed?	[ ]		✓

ACTION: If any DMC is outside the required limits (see Table below), qualify their associated target compounds (See Table below) as follows:

VOLATILE DMC AND THEIR ASSOCIATED TARGET COMPOUNDS

Chloroethane-d5	1,2-Dichloropropane-d6	1,2-Dichlorobenzene-d4
Dichlorodifluoromethane Chloromethane Bromomethane Chloroethane Carbon Disulfide	Cyclohexane Methylcyclohexane 1,2-Dichloropropane Bromodichloromethane	Chlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2,4-Trichlorobenzene 1,2,3-Trichlorobenzene

YES NO N/A

1,4-Dioxane-d8 1,4-Dioxane	**trans-1,3-Dichloropropene-d4** cis-1,3-Dichloropropene trans-1,3-Dichloropropene 1,1,2-Trichloroethane	**Chloroform-d** 1,1-Dichloroethane Bromochloromethane Chloroform Dibromochloromethane Bromoform
2-Butanone-d5 Acetone 2-butanone	**1,1-dichloroethene-d2** 1,1-dichloroethene trans-1,2-Dichloroethene cis-1,2-Dichloroethene	**2-Hexanone-d5** 4-Methyl-2-pentanone 2-Hexanone
Vinyl Chloride-d3 Vinyl Chloride	**Benzene-d6** Benzene	**1,1,2,2-Tetrachloroethane-d2** 1,1,2,2-Tetrachloroethane 1,2-Dibromo-3-chloropropane
1,2-Dichloroethane-d4 Trichlorofluoromethane ~~1,1-Dichloroethene~~ 1,1,2-Trichloro-1,2,2-trifluoroethane Methyl Acetate Methylene Chloride Methyl tert-Butyl Ether Carbon Tetrachloride 1,2-Dichloroethane 1,1,1-Trichloroethane 1,2-Dibromoethane	**Toluene-d8** Trichloroethene Toluene Tetrachloroethene Ethylbenzene o-Xylenes m,p-Xylene Styrene Isopropylbenzene	

YES NO N/A

VOLATILE DEUTERATED MONITORING COMPOUND RECOVERY LIMITS

DMC	Recovery Limits (%) for Water Samples	Recovery Limits (%) for Soil samples
Vinyl Chloride-d3	65 - 131	68 - 122
Chloroethane-d5	71 - 131	61 - 130
1,1-Dichloroethene-d2	55 - 104	45 - 132
2-Butanone-d5	49 - 155	20 - 182
Chloroform-d	78 - 121	72 - 123
1,2-Dichloroethane-d4	78 - 129	79 - 122
Benzene-d6	77 - 124	80 - 121
1,2-Dichloropropane-d6	79 - 124	74 - 124
Toluene-d8	77 - 121	78 - 121
trans-1,3-Dichloropropene-d4	73 - 121	72 - 130
2-Hexanone-d5	28 - 135	17 - 184
1,4-Dioxane-d8	50 - 150	50 - 150
1,1,2,2-Tetrachloroethane-d2	73 - 125	56 - 161
1,2-Dichlorobenzene-d4	80 - 131	70 - 131

1. For any recovery greater than the upper limit:

   a. Qualify "J" all positive associated target compounds.
   b. Do not qualify associated non-detects.

2. For any recovery greater than or equal to 20%, but less than the lower limit:

   a. Qualify "J" all positive associated target compounds.
   b. Qualify "UJ" associated non-detects.

3. For any recovery less than 20%:

YES NO N/A

. . . .

a. Qualify "J" all positive associated target compounds.
b. Qualify "R" all associated non-detects.

NOTE: Up to three (3) DMC's per sample, excluding 1,4-Dioxane-d8, may fail to meet the recovery limits. (SOM, sec. 11.3.4, pg. D-45/Low Medium VOA). Recovery limits for 1,4-Dioxane-d8 are advisory.
As per SOM, any sample which has more than 3 DMC's outside the limits, it must be reanalyzed (SOM sec. 11.4.3.1 pg. D-46/Low Medium VOA).

ACTION: Note in the Data Assessment under Contract Problems/ Non-Compliance if the Lab did not perform reanalysis.

3.4 Are there any transcription/calculation errors between raw data and form II? ___ [ ] ✓

ACTION: If large errors exist, ask the TOPO to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

Note: DMC recovery limits criteria and qualifications apply to samples diluted 5X and less. For samples diluted greater than 5X, recovery criteria does not apply because it is assumed DMC is diluted below the quantitation range.

4.0 Matrix Spike/Matrix Spike Duplicate Recovery (Form III)

Note: Data for MS/MSD will not be present unless requested.

4.1 Are the MS/MSD Recovery Forms (Form III Low/Med VOA) present? [ ] ___ ✓

4.2 Was the MS/MSD analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent)? [ ] ___ ✓

ACTION: If any MS/MSD data are missing, take action as specified in section 3.1 above.

ACTION: No action is taken on MS/MSD data <u>alone.</u> However, using professional judgement, the validator may

YES NO N/A

use the MS and MSD results in conjunction with other QC criteria and determine the need for some qualification of the data. If any MS/MSD % recovery or RPD is out of specification, qualify data to include the consideration of the existence of interference in the raw data. Consideration include, but not limited to the following "Action":

Criteria	Action	
	Detected Spiked Compounds	Non-detected Spiked Compounds
%R or RPD > Upper Acceptance Limit	J	No qualification
20% ≤ %R < Lower Acceptance Limit	J	UJ
%R < 20%	J	Use Professional Judgement
Lower Acceptance Limit ≤ %R; RPD ≤ Upper Acceptance Limits	No qualification	

5.0 Method Blanks (Form IV)

5.1 Is the Volatile Method Blank Summary (Form IV VOA) present for aqueous and soil samples? [✓] ___ ___

5.2 Frequency of Analysis: For the analysis of Low/ Med Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [✓] ___ ___

5.3 Has a VOA method blank been analyzed after the calibration standards and once every 12 hours time period for each GC/MS instrument used? [✓] ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution that contains a target compound exceeding the initial calibration range (see SOM, page D-48/Low/Medium VOA, section 12.1.1.3)? [ ] ___ ✓

YES NO N/A

ACTION: If any method/instrument blank data are missing, notify the TOPO to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, the reviewer may use professional judgement, or substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing a target analyte exceeding the initial calibration standards, inspect the sample chromatogram acquired immediately after this sample for possible carryover. The system is considered uncontaminated if the target analyte is below CRQL. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed? [✓] ___ ___

ACTION: If storage blank data is missing, contact the TOPO to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOM page B-39, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low/Med VOA blanks? [✓] ___ ___

ACTION: Contact the TOPO to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 <u>Chromatography</u>: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

YES NO N/A

Is the chromatographic performance (baseline stability) for each instrument acceptable for ~~Trace~~ low/Med VOAs? [✓] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, and storage blanks less than the CRQL? [✓] ___ *✓

* For SDG # B4TY7

Exception: Methylene Chloride, Acetone and 2-butanone must be less than 2X times their respective CRQLs.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low/Med Concentration VOAs? *✓ [✓] ___

* For SDG # B4W22

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low/Med Concentration VOAs? ✓ *[✓] ___

* For SDG # B4TY7

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-50/VOA, section 12.1.5.2).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Sample must meet the maximum carryover criteria as listed in SOM sec. 11.3.8 p. D-46/VOA.("the sample must not contain a concentration above the CRQL for the target compounds that exceeded the limit in the contaminated sample.")

6.3 Do any field/trip/rinse blanks have positive hits for Low/Med VOA results (including TICs)? ✓ [ ] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

Blank Type	Blank Result	Sample Result	Action for Samples
	Detects	Not detected	No qualification required
	< CRQL *	< CRQL*	Report CRQL value with a U
		≥ CRQL*	No qualification required
	= CRQL *	< CRQL)*	Report CRQL value with a U
Method, Field,		≥ CRQL*	No qualification required
Trip, Storage,		< CRQL*	Report CRQL value with a U

YES NO N/A

Instrument **	> CRQL *	≥ CRQL* and < blank contamination	Report concentration of sample with a U
		≥ CRQL* and ≥ blank contamination	No qualification required
	Gross contamination	Detects	Qualify results as unusable R
	TIC > 2ug/L	Detects	See "Action" below

* 2x the CRQL for methylene chloride, 2-butanone and acetone

** Qualifications based on instrument blank results affect only the sample analyzed immediately after the sample that has target compounds that exceed the calibration range or non-target compounds that exceed 100 ug/L.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

Note: When applied as described in the table above, the contaminant concentration in the blank are multiplied by the sample dilution factor.

ACTION : For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

		YES	NO	N/A
7.1	Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)?	[✓]	___	___
7.2	Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[✓]	___	___
7.3	Did the 12-hour clock begin with either the injection of BFB, or in cases where a closing continuing calibration (CCV) was used as an opening CCV?	[✓]	___	___

Listed below are some, but not necessarily all, examples of acceptable analytical sequences incorporating the use of the opening/closing CCV. Use these examples as a guide for possible analytical sequences that can be expected.

Conditions for When Example Sequence is Appropriate:	**Acceptable Criteria That Must be Met:**	**Notes:**
If time remains on the 12 hour clock after initial calibration sequence	• BFB tunes meet instrument performance criteria. • The five initial calibration standards meet initial calibration criteria. • CCV A meets both opening and closing CCV criteria • CCV B meets closing CCV criteria.	The requirement of starting the new 12-hr clock for Analytical Sequence 2 with a new BFB tune is waived if CCV A meets opening CCV criteria. If CCV B meets opening CCV criteria, a method blank and subsequent samples may be analyzed immediately after CCV B.
If time remains on the 12 hour clock after initial calibration sequence	• BFB tunes meet instrument performance criteria. • The five initial calibration standards meet initial calibration criteria. • CCV A meets closing CCV criteria (but does not meet opening CCV criteria). • CCV B meets opening CCV criteria. • CCV C meets closing CCV Criteria.	CCV A does not meet opening criteria, therefore a new BFB tune must be performed, immediately followed by CCV B before a method blank and any samples may be analyzed. In this case, the new 12 hr clock and Analytical Sequence 2 begins with the injection of the new BFB tune.

YES NO N/A

If more than 12 hrs have elapsed since the most recent initial calibration or closing CCV. OR If the most recent closing CCV was not or could not be used as an opening CCV.	• BFB tunes meet instrument performance criteria. • CCV A meets opening CCV criteria. • CCV B meets both opening and closing CCV criteria. • CCV C meets both opening and closing CCV criteria.	The requirement of starting the new 12 hour clock for Analytical Sequence 2 with a new BFB tune is waived if CCV B meets opening CCV criteria. If CCV C meets opening CCV criteria, a method blank and subsequent samples may be analyzed immediately after CCV B.
If more than 12 hrs have elapsed since the most recent initial calibration or closing CCV OR If the most recent closing CCV was not or could not be used as an opening CCV	• BFB tunes meet instrument performance criteria. • CCV A meets opening CCV criteria. • CCV B meets closing CCV criteria (but does not meet opening CCV criteria). • CCV C meets opening CCV Criteria. • CCV D meets both opening and closing CCV criteria.	CCV B does not meet opening CCV criteria, therefore a new BFB tune must be performed, immediately followed by CCV B before a method blank and any samples may be analyzed. In this case, the new 12 hr clock and Analytical Sequence 2 begins with the injection of the new BFB tune. The requirement of starting the new 12 hr clock for Analytical Sequence 3 with a new BFB tune is waived if CCV D meets opening CCV criteria. If CCV D meets opening criteria, a method blank and subsequent samples may be analyzed after CCV B.

7.4 Have the ion abundances been normalized to m/z 95 ✓ ___ ___

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? ✓ ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, professional Judgement may be applied to determine to what extent the data may be utilized.

	YES	NO	N/A
7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[✓]	___
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V ?	[✓]	___	___

ACTION: If large errors exist, take action as specified in section 3.1 above.

	YES	NO	N/A
7.8 Is the spectrum of the mass calibration compound acceptable?	[✓]	___	___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I)

8.1 Are the Organic Analysis Data Sheets (Form I) present with required header information on each page, for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate?	[✓]	___	___
b. Regional Control/MS/MSD samples?	[ ]	___	✓
c. Blanks (method, trip, etc)?	[✓]	___	___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate?	[✓]	___	___
b. Regional Control/MS/MSD samples?	[ ]	___	✓
c. Blanks (method, trip, etc)?	[✓]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3 Is chromatographic performance acceptable with respect to:

	YES	NO	N/A
Baseline stability?	[✓]	___	___
Resolution?	[✓]	___	___
Peak shape?	[✓]	___	___
Full-scale graph (attenuation)?	[✓]	___	___

	YES	NO	N/A
Other: ____________________?	[ ]	__	✓

ACTION: Use professional judgement to determine the acceptability of the data.

	YES	NO	N/A
8.4 Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	__	__

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment. If spectra are unavailable reject "R" the reported results.

	YES	NO	N/A
8.5 Is the RRT of each reported compound within ± 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	__	__
8.6 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	__	__
8.7 Do sample and standard relative ion intensities agree to within ± 20%?	[✓]	__	__

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in sections 8.4-8.7 above.

ACTION: When sample carry-over is suspected, review section 6.2/Action #2 above before determining if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

	YES	NO	N/A
9.1 Are all Tentatively Identified Compound Forms (Form I VOA-TIC) present? Do listed TICs include scan number or retention time, as well as the estimated "J" and/or "JN" qualifier?	[✓]	__	__

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate?	[✓]	__	✓*

* For SDG # B4TY7, B4W22

YES NO N/A

. . . .

b. Blanks? [ ] __ ✓

b. Are Alkanes listed in/or part of the Case Narrative? [ ] __ ✓

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Verify "JN" qualifier is present for all chemically named TICs having a percent match of greater than or equal 85%. TICs labeled "unknown" are qualified with a "J" qualifier.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) __ ✓ __

ACTION: Flag with "R" only target compound detected in another fraction (except blank contamination).

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum? ✓ __ *✓

9.5 Do TICs and "best match" reference spectra relative ion intensities agree within ± 20%? ✓ __ *✓

* For SDG # B4TY7, B4W22

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.

Action: When a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, solvent preservatives or Aldo condensation, the result should be qualified as unusable (R). (i.e., common lab contaminants such as CO_2(m/e 44), Siloxanes (m/e 73), diethyl ether, hexane, certain freons. Aldol condensation products: 4-hydroxy-4-methyl-2-pentanone, 4-methyl-2-penten-2-one, and 5,5-dimethyl-2(H)-furanone. Solvent preservatives cyclohexene, and related by-products: cyclohexanone, cyclohexenone, cyclohexanol, cyclohexenone, chlorocyclohexene, and chlorocyclohexanol.).

10.0 <u>Compound Quantitation and Reported Detection Limits</u>

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.) __ [ ] ✓

10.2 Are the CRQLs adjusted to reflect sample dilutions and per cent moisture? *✓ __ ✓

* For SDG # B4W22

YES NO N/A

. . . .

ACTION: If errors are large, take action as specified in section 3.1 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

!0.3 For non-aqueous samples, were the percent moisture < 70%? [✓] ___ ___

Action: If the % moisture ≥ 70.0% and < 90.0%, qualify detects as "J" and non-detects as approximated "UJ" If the % Moisture ≥ 90%, qualify detects as "J" and non-detects as "R"

11.0 Standards Data (GC/MS)

11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 5, 10, 50, 100, and 200 μg/ℓ for non-ketones, 10, 20, 100, 200 and 400 ug/L for ketones and 100, 200, 1000, 2000, and 4000 ug/L for 1,4-dioxane. [✓] ___ ___

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

12.2 Are the relative standard deviation (RSD) stable for VOA's over the concentration range of the calibration (i.e., %RSD ≤ 20.%, ≤ 40% for poor performers (see table below), ≤ 50% for 1,4-dioxane)? * [✓] ✓ ___

ACTION: Circle all outliers in red.

NOTE: The twenty two (22) poor performers compounds and associated DMCs are listed below. The relative response factor (RRF) for these compounds must be greater than or equal to 0.010.

* For SDG# B4W22 21

YES NO N/A

Volatile Compounds Exhibiting Poor Response

Volatile Compounds	
Acetone	1,2-Dibromo-3-chloropropane
2-Butanone	Isopropylbenzene
Carbon disulfide	Methyl acetate
Chloroethane	Methylene chloride
Chloromethane	Methylcyclohexane
Cyclohexane	Methyl tert-butyl ether
1,4-Dioxane	trans-1,2-Dichloroethene
1,2-Dibromoethane	4-Methyl-2-pentanone
Dichlorodifluoromethane	2-Hexanone
cis-1,2-dichloroethene	Trichlorofluoromethane
1,2-Dichloropropane	1,1,2-Trichloro-1,2,2-trifluoroethane

ACTION: If %RSD > 20.0%, (> 40.0% for the poor performers, and > 50% for 1,4-dioxane), qualify associated positive results for that analyte "J" (estimated). If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive results "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

12.3 Are any $\overline{RRF}$s < 0.050 (< 0.010 for poor performers)? ✓ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05 or < 0.01 for poor performers, qualify associated non-detects unusable (R) and associated positive results estimated (J).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance the analytes that fail %RSD and/or RRF criteria.

12.4 Are there any transcription/calculation errors in the reporting of RRFs, $\overline{RRF}$s or %RSD values? (Check at least 2 values, but if errors are found, check more.) ___ [ ] ✓

ACTION: Circle errors in red.

	YES	NO	N/A

ACTION: If errors are large, contact the TOPO to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance.

13.0 GC/MS Continuing Calibration Verification (CCV) (Form VII)

		YES	NO	N/A
13.1	Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	✓	___	___
13.2	Did the 12 hour clock begin with either the injection of BFB or in cases where a closing CCV can be used as an opening CCV for each instrument?	✓	___	___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the TOPO to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

		YES	NO	N/A
13.3	Do any volatile compounds have a % Difference (% D) between the initial RRF and CCV RRF exceeding ± 50% for 1,4-Dioxane, ± 40% for the poor performers or ± 25% for the remaining compounds?	✓	* ✓	___

* For SDG # B4W22

ACTION: Circle all outliers in red.

		YES	NO	N/A
13.4	Do any volatile compounds have a RRF < 0.05 or < 0.01 for the poor performers?	✓	___	___

ACTION: Circle all outliers in red.

Note: Verify that the CCV was run at the required frequency (an opening and closing CCV must be run within 12-hour period) and the CCV was compared to the correct initial calibration. If the mid-point standard from the initial calibration is used as an opening CCV, verify that the result (RRF) of the mid-point standard was compared to the average RRF from the correct initial calibration.

Note: The closing CCV used to bracket the end of a 12-hour analytical sequence may be used as the opening CCV for the new 12-hour analyical sequence, provided that all the technical acceptance criteria are met for an opening CCV (see table below). If the closing CCV does not meet the technical acceptance criteria for an opening CCV, then a BFB tune followed by an opening CCV is required and the next 12-hour time period begins with the BFB tune.

Action: Use the following table to qualify data based on the technical acceptance criteria for the opening CCV and closing CCV.

Continuing Calibration Verification (CCV) Actions for Low/Medium Volatiles Analyses

Criteria for	Criteria for	Action

YES NO N/A

Opening CCV	Closing CCV	Detected Associated Compounds	Non-Detected Associated Compounds
RRF < 0.010 (poor responders) RRF < 0.050 (all other volatile target compounds)	RRF < 0.010 (for all volatile target compounds)	J	R
RRF ≥ 0.010 (poor responders) RRF ≥ 0.050 (for all other compounds)	RRF ≥ 0.010 (for all target volatile compounds)	No Action	
%D > 50.0 or < -50.0 (1,4-Dioxane) %D > 40.0 or < -40.0 (poor responders) %D > 25.0 or < -25.0 (all other volatile target compounds)	%D > 50.0 or < -50.0 (for all volatile target compounds)	J	UJ
%D ≤ 50.0 or ≥ -50.0 (1,4-Dioxane) %D ≤ 40.0 or ≥ -40.0 (poor responders) %D ≤ 25.0 or ≥ -25.0 (all other volatile target compounds)	%D ≤ 50.0 or ≥ -50.0 (for all volatile target compounds)	No Action	
Opening CCV not performed at required frequency *	Closing CCV not performed at required frequency *	R	

* See section 13.2 above

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors for the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [ ] ✓

ACTION: Circle errors with red pencil.

ACTION: If errors are large, notify the TOPO to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

Note: All DMCs must meet RRF ≥ 0.010. No qualification of the data is necessary on the DMCs RRF and %RSD/%Diff data alone. However, use professional judgment to evaluate the DMC and %RSD/% Diff data in conjunction with the DMC recoveries to determine the need of qualification of the data.

14.0 Internal Standard (Form VIII)

14.1 Were the internal standard area counts for every sample and blank within the range of 50.0% and 200.0% of its response in the most recent opening CCV standard calibration? [✓] ___ ___

YES NO N/A

If no, were affected sample reanalyzed? [ ] ___ ✓

ACTION: 1. Circle all outliers with red pencil.

14.2 Are the retention times of the internal standards in sample or blanks within ±30 seconds from the RT of the internal standard in the 12-hour associated calibration standard (opening CCV or mid-point standard from initial calibration)? [✓] ___ ___

Action: Use the following table to qualify the data:

INTERNAL STANDARDS ACTIONS FOR LOW/MEDIUM VOLATILES

Criteria	ACTION	
	Detected Associated Compounds *	Non-detected Associated Compounds *
Area counts ≥ 50% and ≤ 200% of 12-hour standard (opening CCV or mid-point standard from initial calibration)	No Action	
Area counts < 50% of 12-hour standard (opening CCV or mid-point standard from initial calibration)	J	R
Area counts > 200% of 12-hour standard (Opening CCV or mid-point standard from initial calibration)	J	No Action
RT difference > 30.0 seconds between samples and 12-hour standard (Opening CCV or mid-point standard from initial calibration)	R**	R
RT difference ≤ 30.0 seconds between samples and 12-hour standard (Opening CCV or mid-point standard from initial calibration)	No Action	

* For volatile compounds associated to each internal standard, see Table 3-Low/Medium Volatile Target Compounds and Deuterated Monitoring Compounds with Corresponding Internal Standards for Quantitation in SOM01.1, Exhibit D, available at:

Http://www.epa.gov/superfund/programs/clp/som1.htm

** Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable "R" if the mass spectral are met.

NOTE: Contract Requirements: The SOM (section 11.4.1 page D-46/VOA Low/Medium states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Concentration VOA analysis? ✓ ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the TOPO to confirm identification of field duplicates with the sampler.

Definitions

BFB - bromofluorobenzene
CCS - contract compliance screening
CLASS - Contract Laboratory Analytical Services Support
CLP - Contract Laboratory Program
CRQL - Contract Required Quantitation Limit
GC/MS - gas chromatography/mass spectroscopy
kg - kilogram
µg - microgram
ℓ - liter
mℓ - milliliter
QC - quality control
RAS - Routine Analytical Services
RIC - reconstructed ion chromatogram
RPD - relative percent difference
RRF - relative response factor
$\overline{\text{RRF}}$ - average relative response factor (from initial calibration)
RRT - relative retention time
RSD - relative standard deviation
RT - retention time
RSCC - Regional Sample Control Center
SDG - sample delivery group
SOP - standard operating procedure
SOW - Statement of Work
TCL - Target Compound List
TCLP - Toxicity Characteristics Leachate Procedure
TIC - tentatively identified compound
TPO - technical project officer
VOA - volatile organic acid
VTSR - validated time of sample receipt
TOPO - Task Order Project Officer

References

1. USEPA Contract Laboratory Program of Work for Organic Analysis Multi-Media, Multi-Concentration, SOW/CLPSOM01.1, October 2004
2. National Functional Guidelines for Superfund Organic Methods Data Review January 2005

ATTACHMENT G

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 - 42583
Atlas Sheet Coordinates 25 : 34 : 235

OWNER IDENTIFICATION - Owner LEITCH, FREDRICK
Address 10 MINDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 1
County UNION Municipality ~~PLAINFIELD CITY~~ Lot No. 3 Block No.
Address 911 South AVE.

TYPE OF WELL (as per Well Permit Categories) ~~MONITORING~~ Date well completed 3/2/93
Regulatory Program Requiring Well ______ Case I.D. # ______
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 703-464-35

WELL CONSTRUCTION

Total depth drilled 39 ft.
Well finished to 39 ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted
If finished above grade, casing height (stick up) above land surface X ft.
Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	29'	4"	SC 40 - PVC
Outer Casing (Not Protective Casing)	—	—	—	
Screen (Note slot size)	29'	39'	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	28'	39'	8"	#2 GRAVEL
Annular Seal/Grout	26'	28'	8"	BENTONITE
Method of Grouting	GRAVITY PLACEMENT			

Static water level after drilling 35'8" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: ~~SUBMERSIBLE~~ X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig AIR ROTARY
Name of Driller MARK NIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 725
Name of Drilling Company CONNOR & BOT WELL DRILLING

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-4" BLACK TOP
4"-8" BLUE STONE FILL
8"-11' DRY RED HARD PACKED SAND.
11'-20' RED SAND & GRAVEL W/SOME DAMP ZONES NO WATER FILL OVERNITE.
20'-32' DRY RED SAND W/ GRAVEL & SOME BOULDERS
32'-39' WET SAND & SAND

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Nipp Date 3/2/93

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

6

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 42585
Atlas Sheet Coordinates 25 : 34 : 235

OWNER IDENTIFICATION - Owner LEITOW. FREDRICK
Address 10 MUNDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 3
County UNION Municipality PLAINFIELD CITY Lot No. 3 Block No. 621
Address 911 SOUTH AVE.

TYPE OF WELL (as per Well Permit Categories) MONITORING Date well completed 2/19/93
Regulatory Program Requiring Well ______ Case I.D. # ______
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 908-464-351

WELL CONSTRUCTION
Total depth drilled 42' ft.
Well finished to 41'7" ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted
If finished above grade, casing height (stick up) above land surface X ft.
Was steel protective casing installed? ☐ Yes ☒ No
Static water level after drilling 39'8" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig AIR ROTARY
Name of Driller MARK HIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N J. License No. 735
Name of Drilling Company COOPER & HIPP WELL DRILLING

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	31'7"	4"	SC 40-PVC
Outer Casing (Not Protective Casing)	—	—		
Screen (Note slot size)	31'7"	41'7"	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	30'	41'7"	8"	#2 GRAVEL
Annular Seal/Grout	28'	30'	8"	BENTOINTE
Method of Grouting	GRAVITY PLACEMENT			

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0 - 4" BLACK TOP
4" - 6' BOULDERS DRY RED SAND
6 - 12' RED SAND & GRAVEL
12' - 22' DAMP ZONE: HARD PACKED RED SAND W/ SOME CLAY
22' - 33' FIRM RED DRY SAND W/SOME BOULDERS
33' - 42' WET COARSE SAND.

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Hipp Date 3/24/93

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 42584
Atlas Sheet Coordinates 25 34 235

OWNER IDENTIFICATION - Owner LEITON, FREDRICK
Address 10 MUNDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 2
County UNION Municipality ~~PLAINFIELD CITY~~ Lot No. 3 Block No. 321
Address 912 SOUTH AVE

TYPE OF WELL (as per Well Permit Categories) ~~MONITORING~~ Date well completed 2/26/93
Regulatory Program Requiring Well ______ Case I.D. # ______
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 908-464-251

WELL CONSTRUCTION
Total depth drilled 43 ft.
Well finished to 42'8" ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted

If finished above grade, casing height (stick up) above land surface X ft.
Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	33	4"	SC 40-PVC
Outer Casing (Not Protective Casing)	—	—	—	
Screen (Note slot size)	33'	43'	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	31'	43'	8"	#2 GRAVEL
Annular Seal/Grout	29'	31'	8"	BENTONITE
Method of Grouting	GRAVITY PLACEMENT			

Static water level after drilling 38.6" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig SCHRAMM
Name of Driller MARK HIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 735
Name of Drilling Company COOPER & HIPP WELL DRILLING

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-3" BLACK TOP
3"-5' LOOSE BOULDERS & DRY RED SAND.
5'-11' RED SAND & GRAVEL
11'-26' HARD PACKED SAND, GRAVEL, W/SOME CLAY & DAMP ZONES.
26'-35' HARD PACKED SAND W/ BOULDERS.
35'-43' WET COARSE RED SAND & GRAVEL.

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Hipp Date 2/1/93

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

ATTACHMENT H

NJDEP	PROJECT NUMBER	BORING NUMBER SnW-7	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Former Stop and Wash LOCATION : 904 to 906 South Avenue
ELEVATION : ground surface DRILLING CONTRACTOR : Environmental Probing Investigations
DRILLING METHOD AND EQUIPMENT USED : 4-inch MacroCore Geoprobe Sampling - 4" OD, 5-feet
WATER LEVELS : Not applicable START : 6/24/2007 11:00 END : 12:00 LOGGER : K. Ward/NJDEP

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	NUMBER /TYPE	PID SCREENING RESULTS PPM/ INTERVAL	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE, CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE AND FLUID LOSS, SAMPLE INTERVALS AND ANALYSIS. INSTRUMENTATION.
0						Begin drilling @ 11:00
	0 to 5	2		2	Red brick (FILL) grades into brown silty SAND with red brick, gravel, concrete fragments, MOIST some clay at 4 to 5 feet	No soil sample since no readings on PID above background
		3		4		
5	5 to 10	6		5	Red silty fine SAND, some cobbles & red shales at 8.5 ft cements chip approx. 5-inches thick DRY	
		8		8		
		9.5		8		
10	10 to 15	11		5.5	Red silty coarse SAND with pebbles some cobbles, MOIST at 14 to 14.5 ft, Dry (GLACIAL TILL)	
		13		2		
		14.5		2.5		
15	15 to 20	16		2.5	Red silty coarse SAND with pebbles some cobbles, DRY (GLACIAL TILL)	
		18		3		
		19.5		1.7		
20	20 to 25	21		2	Red silty coarse SAND with pebbles some cobbles, DRY (GLACIAL TILL)	
		23		2		
		24.5		3		
25					END	End of Soil Cores
30						
35						
40						

H

NJDEP

PROJECT NUMBER	BORING NUMBER SnW-8	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Former Stop and Wash — LOCATION : 904 to 906 South Avenue
ELEVATION : ground surface — DRILLING CONTRACTOR : Environmental Probing Investigations
DRILLING METHOD AND EQUIPMENT USED : 4-inch MacroCore Geoprobe Sampling - 4" OD, 5-feet
WATER LEVELS : 28 to 30 ft — START : 6/24/2007 8:15 — END : 09:15 — LOGGER : K. Ward/NJDEP

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	NUMBER /TYPE	PID SCREENING RESULTS PPM/ INTERVAL	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE, CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE AND FLUID LOSS, SAMPLE INTERVALS AND ANALYSIS, INSTRUMENTATION.
0	0 to 5	1.5		27	Asphalt patch approx. 5-inches thick until 1.0 ft	Begin drilling @ 08:15
		2.5		40	Red fine sandy SILT with angular fragments of siltstones, some cobbles, Dry (GLACIAL TILL)	2.5 to 3 feet SB-8 collected VOCs & % solids (Duplicate collected SB-15)
5		5		7		
	5 to 10	6		6.8		
		8		6.2	Red fine sandy SILT with coarse sand lenses some cobbles, Dry (GLACIAL TILL)	
10		9.5		2.3		
	10 to 15	11		2.9		
		13		2.31	Red fine sandy SILT with coarse damp sand lenses some cobbles, Dry (GLACIAL TILL)	
15		14.5		2.15		
	15 to 20	16.5		8		
		18		6	Red silty coarse SAND with cobble throughout , Dry (GLACIAL TILL)	
20		19.5		6		
	20 to 25	21		3		
		23		30	Red silty coarse SAND with cobble throughout , Dry (GLACIAL TILL)	
25		24.5		2		
	25 to 30	26		2	Red silty coarse SAND with cobble throughout , Dry (GLACIAL TILL) 28 to 30 feet Wet	
30					END	End of Soil Cores
	25 to 30					
35						
40						

PROJECT NUMBER	BORING NUMBER SnW-9	SHEET 1 OF 1

NJDEP

SOIL BORING LOG

PROJECT : Former Stop and Wash — LOCATION : 904 to 906 South Avenue

ELEVATION : ground surface — DRILLING CONTRACTOR : Environmental Probing Investigations

DRILLING METHOD AND EQUIPMENT USED : 4-inch MacroCore Geoprobe Sampling - 4" OD, 5-feet

WATER LEVELS : 28 ft — START : /23/200713:50:00 PM — END : 16:00 — LOGGER : K. Ward/NJDEP

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	NUMBER /TYPE	PID SCREENING RESULTS PPM/ INTERVAL	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE, CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE AND FLUID LOSS, SAMPLE INTERVALS AND ANALYSIS, INSTRUMENTATION.
0	0 to 5	1.5 3 4.5		107 32 13	Red fine sandy SILT with angular fragments of siltstones, some cobbles, Dry (GLACIAL TILL)	Begin drilling @ 13:50 1.5 to 2 feet SB-9 collected VOCs & % solids
5	5 to 10	6 8 10		11 7 5	Red fine sandy SILT with round pebbles, siltstones, some cobbles, Dry (GLACIAL TILL)	
10	10 to 15	12 14.5		3.5 2.5	Red silty coarse SAND and GRAVEL, red shale and quartz fragments, Dry (GLACIAL TILL)	
15	15 to 20	16 18 19.5		2 2 2	Red silty coarse SAND and GRAVEL, red shale and quartz fragments, Dry (GLACIAL TILL)	
20	20 to 25	21 23		2 3	Red silty coarse SAND, some coarse Sand lenses, shale and quartz fragments, Dry (GLACIAL TILL)	
25	25 to 30	26		2	Red silty coarse SAND, some coarse Sand lenses, shale and quartz fragments, Dry (GLACIAL TILL) At 28 feet Wet coarse SAND	
30	25 to 30				END	End of Soil Cores
35						
40						

NJDEP

PROJECT NUMBER	BORING NUMBER SnW-10A	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Former Stop and Wash — LOCATION : 904 to 906 South Avenue

ELEVATION : ground surface — DRILLING CONTRACTOR : Environmental Probing Investigations

DRILLING METHOD AND EQUIPMENT USED : 4-inch MacroCore Geoprobe Sampling - 4" OD, 5-feet

WATER LEVELS : Not Applicable — START : 6/25/2007 8:10 — END : 08:30 — LOGGER : K. Ward/NJDEP

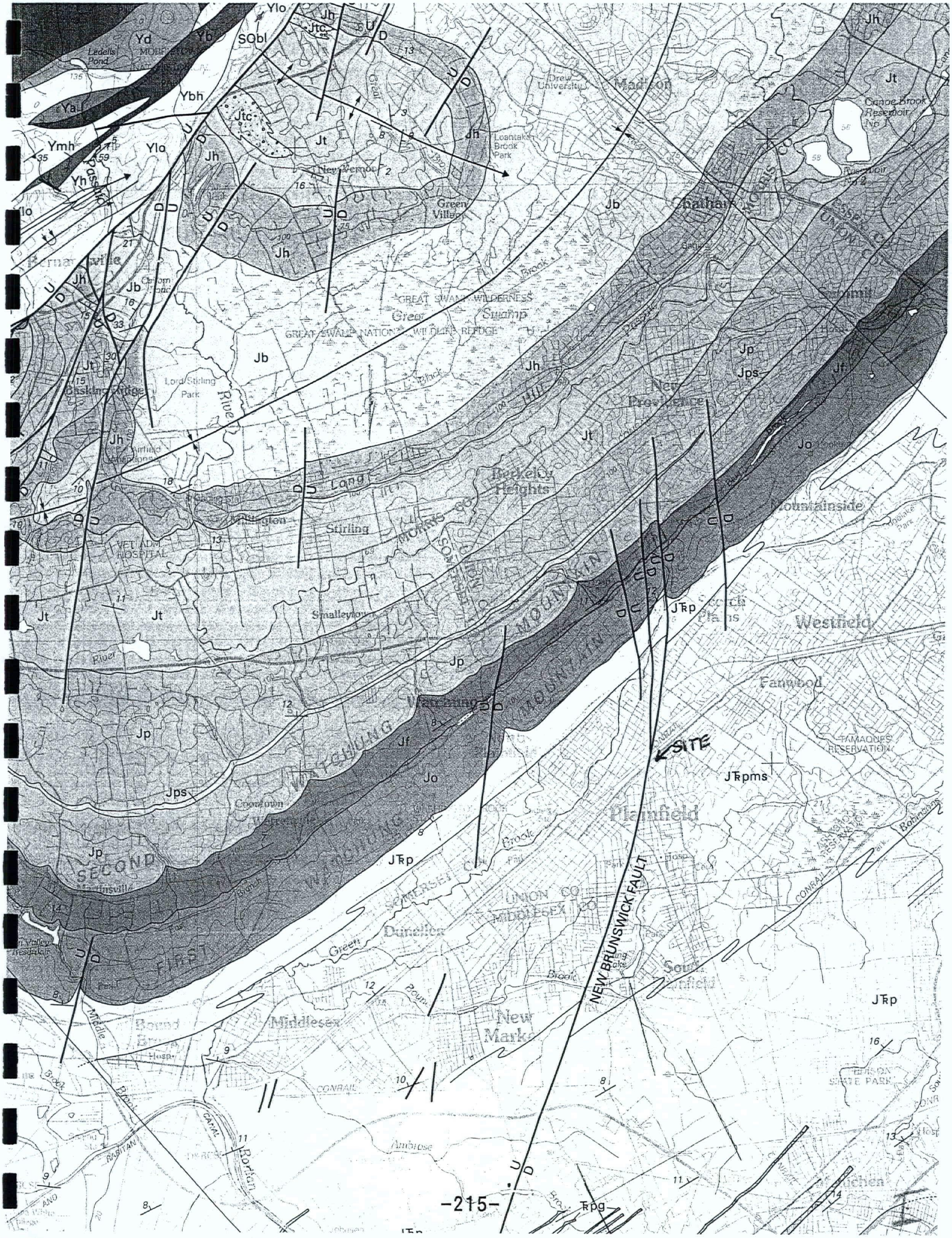
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (FT)	NUMBER /TYPE	PID SCREENING RESULTS PPM/ INTERVAL	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE, CONTENT, RELATIVE DENSITY OR CONSISTENCY, STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE AND FLUID LOSS, SAMPLE INTERVALS AND ANALYSIS, INSTRUMENTATION.
0					Gravel first 5 inches (FILL)	Begin drilling @ 8:10
		1.5		7		
	0 to 5				Red fine sandy SILT with some cobbles coarser sand with depth Dry (GLACIAL TILL)	2.5 to 3 feet SB-10A collected VOCs & % solids
		3		40		
		4.5		5		
5					END	End of Boring
10						
15						
20						
25						
30						
35						
40						

NJDEP	PROJECT NUMBER	BORING NUMBER SnW-10 SHEET 1 OF 1
	SOIL BORING LOG	

PROJECT : Former Stop and Wash LOCATION : 904 to 906 South Avenue
ELEVATION : ground surface DRILLING CONTRACTOR : Environmental Probing Investigations
DRILLING METHOD AND EQUIPMENT USED : 4-inch MacroCore Geoprobe Sampling - 4" OD, 5-feet
WATER LEVELS : 29 to 30 ft START : 6/23/2007 8:45 END : 09:55 LOGGER : K. Ward/NJDEP

DEPTH BELOW SURFACE (FT) INTERVAL (FT)	RECOVERY (FT)	NUMBER /TYPE	PID SCREENING RESULTS PPM/ INTERVAL	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE, CONTENT, RELATIVE DENSITY OR CONSISTENCY. STRUCTURE. MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE AND FLUID LOSS, SAMPLE INTERVALS AND ANALYSIS, INSTRUMENTATION.
0 to 5	1.5 3 4.5		53 11 5.15	Gravel first 5 inches Red fine sandy SILT with angular fragments of siltstones, some cobbles, Dry (GLACIAL TILL)	Begin drilling @ 8:45
5 to 10	6.5 8 10		43 22 20	Red fine sandy SILT with round pebbles, siltstones, some cobbles, Dry (GLACIAL TILL)	
10 to 15	11 13 15		23 13 16	Red fine silty SAND with some gravel (little water) cobbles, and little clay, Dry (GLACIAL TILL)	
15 to 20	16 18 20		13 22 7	Red to brown silty coarse SAND, red shale and cobble fragments, Dry (GLACIAL TILL)	
20 to 25	21 24		6 7	Red silty coarse SAND and GRAVEL, red shale and cobble fragments, Dry (GLACIAL TILL)	
25 to 30	26 28		3 3	Red silty coarse SAND and GRAVEL, red shale and cobble fragments,(GLACIAL TILL) Dry until approximately 29 feet, Wet between 29 & 30 feet END	27.5 to 28 feet SB-10 collected VOCs & % solids END of Soil Cores
30 to 35					
35 to 40					
40 to 45					

ATTACHMENT I



NEW BRUNSWICK FAULT
SITE
Plainfield
Westfield
Fanwood
Mountainside
New Providence
Berkeley Heights
Chatham
Madison
Summit
Stirling
Millington
Basking Ridge
Smalleytown
Martinsville
Dunellen
Middlesex
New Market
South Plainfield
FIRST
SECOND
WATCHUNG
MOUNTAIN
GREAT SWAMP NATIONAL WILDLIFE REFUGE
GREAT SWAMP WILDERNESS
UNION CO
MIDDLESEX CO
SOMERSET CO
MORRIS CO
Drew University
Loantaka Brook Park
Lord Stirling Park
Canoe Brook Reservoir No 1
TAMAQUES RESERVATION
VET ADM HOSPITAL
CONRAIL
Jt
Jh
Jb
Jp
Jps
Jf
Jo
Jtc
JTRp
JTRpms
TRpg
Ylo
Yd
Yb
Ybh
Ya
Ymh
Yh
SObl

[redacted]

- Artificial fill
- am — Artificial fill (mine and quarry tailings)
- Qal — Alluvium
- Qaf — Alluvial-fan deposits
- Qcal — Colluvium and alluvium, undifferentiated
- Qmt — Moonachie terrace deposits
- Qpt — Passaic terrace deposits
- Qst — Stream terrace deposits
- Qpb — Pine Brook terrace deposits
- Qor — Oradell terrace deposits
- Qrt — Raritan terrace deposits
- Qml — Millstone terrace deposits
- Qm — Tidal marsh and estuarine deposits
- Qs — Swamp and freshwater marsh deposits
- Qta — Talus deposits
- Qse — Eolian deposits

LATE WISCONSINAN GLACIAL MELTWATER DEPOSITS

Rockaway Formation—Stratified and sorted gravel, sand, silt, and clay deposited by meltwater in glacial streams and glacial lakes

Deposits of glacial streams—Interbedded sand and gravel, and pebbly coarse sand, horizontally stratified, and sorted

- Qrsr — Saddle River outwash deposit
- Qrps — Pascack outwash deposits
- Qrdl — Delaware terrace deposits
- Qrwq — Wanaque outwash deposits
- Qrbf — Big Flat Brook outwash deposit
- Qrpn — Pequannock terrace deposits
- Qrpp — Pompton Plains outwash deposit
- Qrbd — Brookdale terrace deposits
- Qrbc — Blairs Creek outwash deposits
- Qrvc — Vancampens outwash deposit
- Qrrh — Rahway River outwash deposits
- Qrmc — Musconetcong terrace deposits
- Qrrk — Rockaway River terrace deposits
- Qrlr — Lubbers Run outwash deposit
- Qrbb — Beaver Brook outwash deposits
- Qrhc — Hackettstown outwash deposit
- Qrpf — Plainfield outwash deposit
- Qrmt — Metuchen outwash deposit
- Qrbl — Belvidere outwash deposits
- Qrpa — Perth Amboy outwash deposit
- Qrfl — Florham outwash deposit
- Qrtu — Terrace and meltwater fan deposits, undifferentiated and not correlated

Deposits of major glacial lakes—Interbedded sand and gravel, and coarse pebbly sand, in delta topset beds and tributary stream deposits (shown by dot pattern) and in esker deposits; interbedded sand and some gravel in inclined foreset beds and subhorizontal bottomset beds of deltas and glaciolacustrine fans; and thinly bedded very fine sand, silt, and clay in lake-bottom deposits (shown by dashed-line pattern)

CENTRAL AND EASTERN HIGHLANDS

- [redacted] — W[redacted]rook[redacted]sits
- [redacted]eville[redacted]sits

BASINS OF UPPER PASSAIC AND RAMAPO RIVERS AND UPPER HOHOKUS BROOK

- Qrrv — Ramapo Valley deposits
- Qrrm — Ramapo deposits
- Qrfr — Franklin Lakes deposits
- Qrprk — Preakness deposits

HACKENSACK, RAHWAY, LOWER PASSAIC, AND LOWER RARITAN RIVER BASINS

- Qrtp — Tappan deposits
- Qrnw — Norwood deposits
- Qrmh — Mahwah deposits
- Qrms — Musquapsink deposits
- Qrho — Hohokus deposits
- Qrhh — Highwood deposits
- Qrdw — Delawanna deposits
- Qrsh — Sandy Hill deposits
- Qrhn — Haledon deposits
- Qrbm — Bloomfield deposits
- Qrv — Verona deposits
- Qrez — Elizabeth deposits
- Galloping Hills deposits
- Nomahegan deposits
- Summit deposits

LATE WISCONSINAN TILLS AND MORAINE DEPOSITS

Sandy, sandy-to-silty, and silty-to-clayey deposits, consisting of a very poorly sorted matrix of sand, silt, and clay containing commonly 5 to 50 percent pebbles, cobbles, and boulders; generally nonstratified and homogeneous; chiefly compact; deposited directly from glacial ice

Tills

- Qr — Rahway Till
- Qn — Netcong Till
- Qnu
- Qk — Kittatinny Mountain Till

Moraine deposits—Recessional moraines

- Qncm — Cherry Ridge moraine deposit
- Qnpm — Mud Pond moraine deposit
- Qnsm — Silver Lake moraine deposit
- Qklm — Libertyville moraine deposit
- Qkmu — Moraine deposits, undifferentiated and not correlated
- Qkvm — Millville moraine deposit
- Qksm — Steeny Kill Lake moraine deposit
- Qkmm — Montague moraine deposit
- Qkam — Augusta moraine deposit
- Qkdm — Dingmans Ferry moraine deposit
- Qkom, Qnom — Ogdensburg-Culvers Gap moraine deposit
- Qkgm — Franklin Grove moraine deposit

Moraine deposits—Segments of the terminal moraine

up ... volcaniclastic rock. Lowest flow is generally massive ... has ... spaced curvilinear joints; columnar joints in lowest flow become more common toward the northeast. Middle flow is massive or has columnar jointing. Lower part of the uppermost flow has pillow structures; upper part has pahoehoe flow structures. Tops and bottoms of flow layers are vesicular. Maximum thickness is about 182 m (597 ft)

JTRp | JTRpms | JTRps | JTRpsc | JTRpcq | JTRpcl | TRpg

Passaic Formation (Lower Jurassic and Upper Triassic) (Olsen, 1980)—Reddish-brown to brownish-purple and grayish-red siltstone and shale (JTRp) maximum thickness 3,600 m (11,810 ft). At places contains mapped sandy mudstone (JTRpms), sandstone (JTRps), conglomeratic sandstone (JTRpsc) and conglomerate containing clasts of quartzite (JTRpcq), or limestone (JTRpcl). Formation coarsens up section and to the southwest. Quartzite conglomerate unit (JTRpcq) is reddish-brown pebble conglomerate, pebbly sandstone, and sandstone in upward-fining sequences 1 to 2 m (3–6 ft) thick. Clasts are subangular to subrounded, quartz and quartzite in sandstone matrix. Sandstone is medium to coarse grained, feldspathic (up to 20 percent feldspar), and locally contains pebble and cobble layers. Conglomerate thickness exceeds 850 m (2,790 ft). Limestone conglomerate unit (JTRpcl) is a medium-bedded to massive, pebble to boulder conglomerate. Clasts are subangular dolomitic limestone in matrix of brownish- to purplish-red sandstone to mudstone; matrix weathers light gray to white near faults. Maximum thickness unknown.

Conglomeratic sandstone (JTRpsc) is brownish-red pebble conglomerate, medium- to coarse-grained feldspathic sandstone, and micaceous siltstone; unit is planar to low-angle trough cross laminated, burrowed, and contains local pebble layers. Unit forms upward-fining sequences 0.5 to 2.5 m (1.6–8 ft) thick. Conglomeratic sandstone thickness exceeds 800 m (2,625 ft). Sandstone (JTRps) is interbedded grayish-red to brownish-red, medium- to fine-grained, medium- to thick-bedded sandstone and brownish- to purplish-red, coarse-grained siltstone; unit is planar to ripple cross laminated, fissile, locally calcareous, contains desiccation cracks and root casts. Upward-fining cycles are 1.8 to 4.6 m (6–15 ft) thick. Sandstone beds are coarser and thicker near conglomerate units (JTRpcq, JTRpcl). Maximum thickness about 1,100 m (3,610 ft).

Sandy mudstone (JTRpms) is reddish-brown to brownish-red, massive, silty to sandy mudstone and siltstone, which are bioturbated, ripple cross laminated, and interbedded with lenticular sandstone. To southwest where similar lithologic units also occur, they have not been mapped separately, but have been included in undivided unit JTRp. Rhythmic cycles 2 to 7 m (7–23 ft) thick of gray-bed sequences (TRpg), termed Van Houten cycles by Olsen (1985), contain basal thin-bedded to finely laminated shale to siltstone, which grade upward through laminated to microlaminated, locally calcareous mudstone to siltstone and finally into massive silty mudstone. Lowest part of cycle has some desiccation features and local fossils; middle part has highest organic content and the most fossils; highest part contains mudcracks, burrows, and root casts. Gray-bed cycles are abundant in lower half of Passaic Formation and less common in upper half. Rocks of the Passaic Formation have been locally thermally metamorphosed to hornfels where in contact with the Orange Mountain Basalt, diabase dikes, and sheetlike intrusions. Total thickness of formation ranges from 3,500 to 3,600 m (11,480–11,810 ft)

TRl

Lockatong Formation (Upper Triassic) (Kümmel, 1897)—Cyclically ... greenish gray and

Kanouse Sandstone (Kümmel, 1908)—Medium-gray, light-brown, and grayish-red, fine- to coarse-grained, thin- to thick-bedded sparsely fossiliferous sandstone and pebble conglomerate. Basal conglomerate beds are interbedded with siltstone similar to the upper part of the Esopus Formation and contain well-sorted, subangular to subrounded, gray and white quartz pebbles less than 1 cm (0.4 in.) long. Lower contact gradational. About 14 m (46 ft) thick

Esopus Formation (Vanuxem, 1842; Boucot, 1959)—Light- to dark-gray, laminated to thin-bedded siltstone interbedded with dark-gray to black mudstone, dusky-blue sandstone and siltstone, and yellowish-gray, fossiliferous siltstone and sandstone. Lower contact probably conformable with the Connelly Conglomerate. The formation is about 100 m (330 ft) thick at Greenwood Lake and estimated at 55 m (180 ft) thick in Longwood Valley

Connelly Conglomerate (Chadwick, 1908)—Grayish-orange weathering, very light gray to yellowish-gray, thin-bedded quartz-pebble conglomerate. Quartz pebbles average 1 to 2 cm (0.4–0.8 in.), are subrounded to well rounded, and well sorted. The unit unconformably overlies the Berkshire Valley Formation. About 11 m (36 ft) thick

Sbp

Berkshire Valley and Poxono Island Formations, undivided (Upper Silurian)—Thickness ranges from 76 m (250 ft) at Greenwood Lake to 122 m (400 ft) in Longwood Valley

Berkshire Valley Formation (Barnett, 1970)—Commonly yellowish-gray-weathering, medium-gray to pinkish-gray, very thin to thin-bedded fossiliferous limestone interbedded with gray to greenish-gray calcareous siltstone and silty dolomite, medium-gray to light-gray dolomite conglomerate, and grayish-black, thinly laminated shale. Lower contact conformable. Thickness ranges from 27 to 38 m (90–125 ft) thick

Poxono Island Formation (White, 1882; Barnett, 1970)—Very thin to medium-bedded sequence of medium-gray, greenish-gray, or yellowish-gray, mud-cracked dolomite; light-green, pitted, medium-grained calcareous sandstone, siltstone, and edgewise conglomerate containing gray dolomite; and quartz-pebble conglomerate containing angular to subangular pebbles as much as 2 cm (0.8 in.) long. Interbedded grayish-green shales at lower contact are transitional into underlying Longwood Shale. Thickness ranges from 49 to 84 m (160–275 ft) thick

Sl

Longwood Shale (Upper and Middle Silurian) (Darton, 1894)—Dark-reddish-brown, thin- to very thick bedded shale interbedded with cross-bedded, very dark red, very thin to thin-bedded sandstone and siltstone. Lower contact conformable. About 100 m (330 ft) thick

Sg

Green Pond Conglomerate (Middle and Lower Silurian) (Rogers, 1836)—Medium- to coarse-grained quartz-pebble conglomerate, quartzitic arkose and orthoquartzite, and thin- to thick-bedded reddish-brown siltstone. Grades downward into gray, very dark red, or grayish-purple, medium- to coarse-grained, thin- to very thick bedded pebble to cobble conglomerate containing clasts of red shale, siltstone, and chert; yellowish-gray sandstone and chert; dark-gray shale and chert; and white-gray and pink milky quartz. Quartz cobbles are as long as 10 cm (4 in.), and rare red shale clasts are as much as 46 cm (18 in.) across. Milky quartz pebbles average 2.5 cm (1 in.) in length. Red arkosic quartz- ... conglomerate and quartzite are more abundant than gray and

Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin

MLRA Explorer Custom Report

S - Northern Atlantic Slope Diversified Farming Region
148 - Northern Piedmont

MLRA 148 - Northern Piedmont

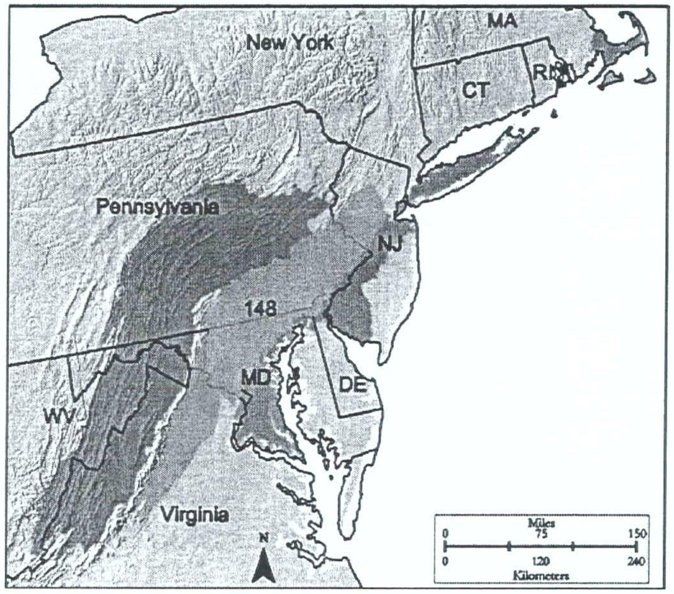


Figure 148-1: Location of MLRA 148 in Land Resource Region S

Introduction

This area (shown in fig. 148-1) is in Pennsylvania (38 percent), Virginia (30 percent), Maryland (21 percent), New Jersey (10 percent), and Delaware (1 percent). It makes up about 12,800 square miles (33,170 square kilometers). Philadelphia, Pennsylvania, is on the eastern boundary of this area. The north end of the MLRA, just southwest of the densely populated area of northeast New Jersey, includes the cities of Morristown, Plainfield, Somerset, and New Brunswick, New Jersey. The part of the MLRA in the western suburbs of the District of Columbia includes the cities of North Bethesda, Potomac, Rockville, Gaithersburg, and Germantown, Maryland. Another heavily populated area includes the greater part of Baltimore, Maryland, and cities just to the west of Baltimore. Charlottesville, Virginia, also is in this area. Interstates 80, 78, 76, 70, and 66 cross this area from east to west. Interstates 83 and 95 cross the area from north to south. The Chesapeake and Ohio Canal National Historic Park, along the Potomac River, and the Manassas National Battle Field, in northern Virginia, are in this MLRA. The Gettysburg National Military Park, in Pennsylvania, is just inside the west edge of the MLRA. The Fort Detrick Military Reservation is in the part of the area in Maryland. Many State parks and a few State forests are in this MLRA.

Physiography

Most of this area is in the Piedmont Upland Section of the Piedmont Province of the Appalachian Highlands. The southwest end and the northwest portion of the southwest half of this MLRA and the southeast portion of the northeast half of the MLRA are in the Piedmont Lowlands Section of the same province and division. The northwest portion of the northeast half of the MLRA is in the New England Upland Section of the New England Province of the Appalachian Highlands. Most of this area is an eroded part of the Piedmont Plateau. This MLRA is mostly gently sloping or sloping. Intrusive dikes and sills form fairly sharp ridges that interrupt the less steep terrain. Differential erosion has created low areas where rocks are soft and high areas where rocks are resistant to erosion. The steeper slopes generally are on ridges at the higher elevations or on side slopes adjacent to drainages. Elevation is dominantly 330 to 985 feet (100 to 300 meters) but ranges from 80 to 985 feet (25 to 300 meters) in most areas. It is as much as 1,650 feet (505 meters) or more on some ridges and isolated peaks.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Delaware (0204), 23 percent; Potomac (0207), 22 percent; Susquehanna (0205), 20 percent; Lower Chesapeake (0208), 18 percent; Upper Chesapeake (0206), 10 percent; and Lower Hudson-Long Island (0203), 7 percent. A number of National Wild and Scenic Rivers occur in this area. From New Jersey to Virginia, these rivers include the Schuylkill, Octoraro, Patuxent, Monocacy, and Rappahannock Rivers and Goose Creek and Deer Creek. The Delaware River separates Pennsylvania and Delaware from New Jersey in this area. The Susquehanna River crosses the northern end of the area, and the Potomac River separates the District of Columbia and Maryland from Virginia at the southern end of the area.

Geology

Most of this area is above the "fall line" on the east coast. The fall line is the boundary between Coastal Plain sediments and the crystalline bedrock of the interior uplands. The eastern third of the area is underlain mainly by Lower Paleozoic to Precambrian sediments and igneous rocks that have been metamorphosed. The typical rock types in this part of the MLRA are granite, gabbro, gneiss, serpentinite, marble, slate, and schist. The central part of the area is a crustal trough or basin that formed during the Triassic period. This basin represents the ancestral Atlantic Ocean that formed when the European-African continental plate began its movement westward from the North American plate. Many of the rocks in this part of the MLRA are the same rocks as those in the western British Isles, since they were deposited at a time when the North American, European, and African plates were all one landmass. The rocks deposited in the basins include Triassic sandstone, shale, and conglomerate. These ancient basins have been uplifted and are now in the uplands in this MLRA. Numerous Jurassic diabase and basalt dikes and sills cut the sedimentary rocks in the basins. The far western part of this MLRA is underlain mostly by Cambrian to Silurian limestone. The northern boundary of the MLRA marks the southernmost extent of the Wisconsin glaciers. Earlier periods of glaciation extend farther south in north-central New Jersey and in eastern Pennsylvania. Unconsolidated stream alluvium (primarily sand and gravel) fills the major river valleys.

Soils

The dominant soil orders in this MLRA are Alfisols, Inceptisols, and Ultisols. The soils in the area dominantly have a mesic soil temperature regime, a udic soil moisture regime, and mixed, micaceous, or kaolinitic mineralogy. They are moderately deep to very deep, moderately well drained to somewhat excessively drained, and loamy or loamy-skeletal. Hapludalfs (Duffield, Neshaminy, and Penn series) and Dystrudepts (Manor, Parker, and Mt. Airy series) formed in residuum on hills. Fragiudalfs (Reedington series) formed in residuum on footslopes and in drainageways. Hapludults (Chester, Elioak, Gladstone, and Glenelg series) and Kanhapludults (Hayesville series) formed in residuum on hills, upland divides, and ridges. Fragiudults (Glenville series) formed in colluvium or residuum on hills. The far northeastern extent of the MLRA was affected by early periods of glaciation, and many soils formed in very deep, highly weathered till. The dominant soils in this part of the MLRA are Hapludalfs (Washington and Bartley series) and Fragiudults (Annandale and Califon series).

NRCS Major Land Resource Areas Explorer

MLRA Explorer

NRCS Natural Resources Conservation Service

MLRA Selection Method

Interactive | LRR/MLRA | State/County | Fed. Lands | Ecoregion | HUC-8 | PLSS

New Jersey

Union

Select MLRAs

Lay... | Clear Map | Leg... | Continental U.S.

3 selected MLRAs: 144A 148 149B

ATTACHMENT J

ENVIRONMENTAL STRATEGIES & APPLICATIONS, INC.

RECEIVED
NOV 18 1994

November 16, 1994

Mr. Carlton Dudley
New Jersey Department of Environmental Protection
Division of Responsible Party Site Remediation
CN-028
401 East State Street
Trenton, NJ 08625

Re: **Preliminary Assessment & Site Investigation Report**
912 South Avenue
Plainfield, Union County
NJDEP Case #93-04-02-1051
Metro File #20-12-36

Dear Mr. Dudley:

Environmental Strategies & Applications, Inc. (ESA) is submitting this Preliminary Assessment & Site Investigation Report on behalf of Mr. Alfred Leitow, former owner of the property know as 912 South Avenue, Township of Plainfield. Mr. Leitow entered into a Memorandum of Agreement, executed on September 9, 1993, with the NJDEP which required a preliminary assessment and site investigation (PA/SI) of the above referenced property. This was required due to findings of PCE and TCE in the ground water beneath this site. This report is in fulfillment of the PA/SI requirement.

Based on the history of operational activities at 912 South Avenue, file reviews of surrounding properties, and direction of ground water flow beneath the site, it has been concluded that the source of the PCE and TCE contamination in the ground water is from off-site. Details of the investigation are provided in the enclosed report.

If you have any questions, please call me at (908)469-8888.

Sincerely,
For Environmental Strategies & Applications, Inc.

Jodi L. Ruff

Jodi L. Ruff
Project Manager

c: Alfred Leitow

347 Elizabeth Avenue, Suite 100 · Somerset, New Jersey 08873 · 908/469-8888 · Fax 908/469-1120

ENVIRONMENTAL STRATEGIES & APPLICATIONS, INC.

PRELIMINARY ASSESSMENT
&
SITE INVESTIGATION REPORT

Leitow Property
912 South Avenue
Plainfield, New Jersey

Prepared for:
Mr. Alfred Leitow
A.K. Leitow Developers
PO Box 4526
Warren, NJ 07059

Prepared By:

Environmental Strategies and Applications, Inc.
347 Elizabeth Avenue, Suite 100
Somerset, New Jersey 08822
908-469-8888

Prepared by:
Jodi L. Ruff
Jodi L. Ruff
Environmental Specialist

Reviewed by:
B A Fresco
Blaine A. Fresco
Vice President of Operations

November 15, 1994

TABLE OF CONTENTS

1.0 INTRODUCTION

Environmental Strategies and Applications, Inc. (ESA) was contracted to perform a Preliminary Assessment and Site Investigation of the property located at 912 South Avenue, Plainfield, New Jersey. Figure 1 (Attachment 1) shows the general site location. This property assessment/investigation was performed in response to an NJDEP Memorandum of Agreement (MOA) entered into by Alfred K. Leitow, former property owner, on September 9, 1993.

The MOA requires implementation of a Preliminary Assessment and Site Investigation in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E). This report comprises the findings of the Preliminary Assessment and the Site Investigation conducted by ESA.

1.1 Site Description

The property is comprised of a half-acre lot with a one story commercial building and a paved parking area. The building was constructed in 1969 and is divided into seven separate stores. Figure 2 (Attachment 1) shows the site layout. Prior to that the land was undeveloped and part of a nursery which is still in operation adjacent to the subject site to the northeast. To the south are residential homes, to the southwest is a Laundromat, and across South Avenue to the northwest are a strip of commercial and light industrial facilities. Directly behind those facilities are another block of commercial and light industrial facilities along North Avenue. Separating these two strips of facilities is a railroad line.

The current building has always been serviced by natural gas, public water and city sewer. There are no known underground storage tanks, septic systems or floor drains at the site. There are two sump pumps in the basement that are connected to the storm sewer. They are used for discharging rainwater only.

1.2 Site History Summary

In early 1993, Mr. Alfred K. Leitow entered into a purchase agreement with Hyper Harry's, an auto supply company. As part of the agreement and prior to finalizing the sale, Hyper Harry's installed and sampled three monitor wells (MW-1, MW-2 and MW-3) on the subject property. These wells were installed on February 26, 1993 by Cooper & Hipp Drilling Company. The wells were sampled on March 20, 1993 by ANCO Environmental and analyzed for volatile organic compounds at W.A.T.E.R. Works Laboratory, Inc. (East Orange, NJ).

Based on the ground water results (refer to Section 1.3 below), ANCO notified the NJDEP Environmental Action Hotline and was assigned case #93-04-02-1051. The site was then referred to the NJDEP Bureau of Field Operations, Metro Regional Office for issuing an MOA for the investigation of the ground water contamination. On

September 9, 1993, an MOA was entered into between the NJDEP and Mr. Alfred K. Leitow. The MOA required implementation of a Preliminary Assessment and Site Investigation. ESA was subsequently hired to conduct the Preliminary Assessment and Site Investigation.

1.3 Historical Sampling Results

Three ground water monitoring wells were installed and sampled at the site in February and March, 1993, respectively by Hyper Harry's, a perspective purchaser of the property. The results revealed PCE in all three wells at concentrations of 38 parts per billion (ppb) in MW-1, 40 ppb in MW-2 and 41 ppb in MW-3. TCE was also detected at 2.1 ppb in both MW-1 and MW-2. The NJDEP ground water quality standard for PCE and TCE is 1 ppb. The well locations and results are depicted on Figure 3 (Attachment 1). The monitor well records and ground water sampling results, as provided by ANCO, are included in Attachment 2.

2.0 PRELIMINARY ASSESSMENT

A preliminary site assessment was conducted by ESA to identify any potentially contaminated areas of concern on or around the site which may be the source of the TCE and PCE ground water contamination. The preliminary assessment consisted of a site reconnaissance to identify on-site conditions, a site historical review to identify potential prior problems, a government records/file search to identify potential off-site contamination sources, and the determination of ground water flow under the property.

The details of the site reconnaissance and ground water flow determination are provided below. The findings of the historical review and government records/file search are provided in Sections 3.0 and 4.0.

2.1 Site Reconnaissance

A site reconnaissance was conducted by Ms. Jodi Ruff of ESA along with Mr. Leitow, on November 8, 1993. The site reconnaissance included the exterior viewing of the site and the interior viewing of a common basement. The site consists of a one story building divided into seven sections each containing a separate tenant, and a paved front and rear parking area. The following table is a list of current tenants:

Store #	Nature of Business	Dates of Occupancy
1	Mini Mart/Convenient Store	7/1/92 to present
2	Vacant	
3	Pigtails T/A Bar-B-Que Ribs	2/25/92 to present
4	Ms K's Hair Salon (Ms. K's Sons and Daughters, Inc.)	10/1/90 to present
5	Belvidere Health Aids Rental	Unkown
6	Vacant	
7	Atkol Video and Movie Rental	4/1/94 to present

The site was found to be in good condition with minimal solid waste debris scattered outside the store fronts. Due to the nature of each tenant's operation, no hazardous materials were observed at the site. On February 22, 1993, an NJDEP ECRA Letter of Non-Applicability was issued for 4 of the above 7 leaseholds. This is further described in Section 3.2.5 below.

During the site reconnaissance, no evidence of underground storage tanks, septic tanks, spills, floor drains or hazardous material storage areas were observed. The only reported discharge is rainwater to two sumps located in the basement. No staining was observed around the sumps. The building is reportedly connected to the local sanitary sewer. All solid waste is disposed of in a dumpster located behind the building. Photographs of the site are included in Attachment 3.

Nothing was noted during the site reconnaissance to suggest current or prior use of chlorinated solvents at this site. However, surrounding the site to the north, east and west are commercial and light industrial businesses. Many of these sites could be potential sources of PCE and TCE ground water contamination. A detailed discussion on some of these sites is included in Section 4.0.

2.2 Ground Water Flow Direction

The three monitoring wells located on the subject property were surveyed by a licensed New Jersey surveyor. The depth of the groundwater in the three monitoring wells was measured from the top of the PVC casing. The following table provides the elevations of the well casing, PVC and ground at the well locations. All elevations are based on an assumed bench mark elevation of 100.00 feet.

Well #	Elevation	Description
MW-1	97.06 97.09 96.89	Ground level Casing of the well PVC
MW-2	99.72 99.82 99.43	Ground level Casing of the well PVC
MW-3	100.64 100.70 100.39	Ground level Casing of the well PVC

On November 8, 1993, the depth of groundwater in the three monitoring wells was recorded and based on these measurements the elevation of groundwater in three wells determined. The following table illustrates the elevation of groundwater based on the depth data collected from the wells.

Well #	Depth of Groundwater(Feet)	Elevation of PVC	Groundwater Elevation
MW-1	36.42	96.89	60.47
MW-2	39.22	99.43	60.21
MW-3	40.30	100.39	60.09

Ground water elevation contours were drawn in order to determine the direction of the flow of groundwater. A groundwater contour map was generated and is included as Figure 4 in Attachment 1. The contour map shows the direction of ground water flow to be in an easterly direction. Based on the flow of ground water, MW-1 is an upgradient well, MW-2 is side and upgradient, and MW-3 is downgradient.

Since MW-1 is upgradient and away from all potential on-site operational activities, it appears that the PCE and TCE is originating from an off-site source.

3.0 RECORDS REVIEW

As part of the preliminary assessment, a review of the available information maintained by the local, state and federal regulatory agencies was performed. The main reason for the regulatory search was to identify any sites of environmental concern around the subject property. A copy of the state and federal review information is contained in Attachment 3. The results of the regulatory review are summarized below:

3.1 Local Regulatory Review

A review of available information relative to 912 South Avenue, Plainfield, and maintained by the local regulatory agencies was conducted as described below.

3.1.1 Construction Department

The City Building Department was contacted to determine if any construction permits were given to the property. According to the Building Department, there were no active permits for the subject site.

3.1.2 Fire Department

The Fire Department was contacted to ascertain the presence or absence of any underground storage tanks. Information available from the Fire Department indicates that one 550 gallon fuel oil tank was present on the site in 1950.

3.1.3 Property Ownership History

ESA contacted the City of Plainfield, Tax Assessor's office for information regarding the present and past ownership of the property. According to the information available from the Tax Assessor's office and from Mr. Leitow, the ownership history of the subject site is as follows:

Grantee	Grantor	Date
1. Emil Pauly	Frank M.Wells	1903
2. Harry S. Dunham & Eva	Emil Pauly	1923
3. Vito W. Pilato	Harry S. Dunham & Eva	1949
4. Helmor Realty, Inc.	Vito W. Pilato	1962
5. Helmor Realty, Inc.	Helmor Realty, Inc.	1966
6. First National Bank	Helmor Realty, Inc.	1974
7. Alfred K. Leitow	First National Bank	1979
8. Vardham R & Rekha Doshi	Alfred K. Leitow	1993
9. Alfred K. Leitow		

3.2 State Regulatory Review

Information from the records of the New Jersey Department of Environmental Protection (NJDEP) was reviewed and is summarized below

3.2.1 State Hazardous Waste Sites

The State Hazardous Waste Site Records is a listing of known or suspected, uncontrolled or abandoned hazardous waste sites that have been selected by the state for priority cleanup. Priority sites planned for the cleanup using state funds are identified along with the sites where cleanup will be paid for by potentially responsible parties.

Two (2) sites were identified within a one mile radius of the site. The identified sites are East 4th Street Site, located at 314 East 4th Street, Plainfield, and Plainfield Gas Works at Watchung Ave & East 4th Street, Plainfield.

EPA conducted a preliminary assessment of the East 4th Street site and has determined that no further action is necessary since no hazard was identified. Plainfield Gas Works is currently under investigation by the government to assess the extent of further action.

3.2.2 Solid Waste Facilities/Landfill Sites

These type of records typically contain an inventory of solid waste disposal facilities or landfills that may be active or inactive.

No Solid Waste Facilities/Landfill sites were identified in the search within a radius of 0.5 mile from the subject property.

3.2.3 Underground Storage Tank Database

New Jersey Bureau of Underground Storage Tanks Database maintains a list of properties having registered underground storage tanks (UST's).

The search of this database identified two (2) sites within a search radius of 0.125 mile from the subject site. These two sites are Maxson Middle School at 920 E. 7th Street and Howell Electric Motors at 900 North Avenue.

3.2.4 Leaking Underground Storage Tank (LUST) Incident Reports

Leaking Underground Storage Tank (LUST) records contain an inventory of reported leaking underground storage tank incidents.

Five (5) leaking underground storage tank incidents were reported within a radius of 0.5 mile from the subject property. These sites are: 1) C. Petro Leasing Corp. at 1000 North Avenue, 2) Furino & Son, Inc. at 767 North Avenue, 3) Queen City Fuel Oil

Co. at 717 North Avenue, 4) G.O. Keller at 1201 South Avenue, and 5) Eckner's Garage, Inc. at 620 South Avenue.

Each of these five sites were further investigated in order to determine the nature of the releases at the sites. Files were reviewed at NJDEP BUST office in order to obtain specific information about ground water contamination. The file review revealed that 2 of the 5 sites had releases to ground water. The other 3 were releases to soil only. The results of the review are summarized in Section 4.0.

3.2.5 Industrial Site Recovery Act (ISRA)

The Industrial Site Recovery Act (ISRA) is state legislation that requires certain businesses undergoing a sale of property, sale of business or cessation of operations to cleanup contamination on their site prior to transfer. ISRA was signed into law on June 16, 1993 and was effective immediately. It is the predecessor to the Environmental Cleanup Responsibility Act (ECRA).

On February 22,1993, this site received a Letter of Non-Applicability (#N30148) from the former ECRA office. The letter was issued for 912 South Avenue Store #1, Lot 3, Block 621, Plainfield Borough, Union County. It covered the following tenants: 1) Quick Food Mart, 2) 904-912 Properties, 3) Pigtails Store #3, 4) Ms. K's Sons & Daughters, Inc., 5) Accurate Ref. & Appliance Service, Inc., and 6) World Commercial Corp.

The non-applicability determination was made due to the absence of any tenants defined as an "industrial establishment". Under ECRA/ISRA, an "industrial establishment" is defined by the standard industrial classification numbers covered by the Act. None of the tenants occupying the building at that time were found to have a subject SIC # which suggests the lack of hazardous materials used in their businesses.

A copy of the non-applicability letter is included in Attachment 5.

3.3 Federal Regulatory Review

Information from various record systems compiled by the Unites States Environmental Protection Agency (USEPA) was reviewed. These programs include but are not necessarily limited to, the following:

- National Priorities List (NPL-Superfund)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- Resource Conservation and Recovery Information System (RCRIS)
- Emergency Response Notification System (ERNS)
- Hazardous Materials Incident Report System (HMRIS)

No sites were identified under the NPL and RCRIS list within a search radius of one (1.0) mile from the subject site. The CERCLIS database did not identify any sites within a radius of 0.5 mile from the subject property. Three (3) RCRA Small Quantity Generators and two (2) RCRA Large Quantity Generators were identified within a radius of 0.125 mile of the subject property.

The subject property is not listed under other federal databases including HMRIS, ERNS, PCB Activity Database (PADS), RCRA Administrative Action Tracking System (RAATS), Toxic Release Inventory System (TRIS) and Toxic Substance Control Act (TSCA).

3.4 Sanborn Maps Review

Sanborn Maps were obtained for the years 1910, 1951, 1956, 1963, and 1982. The following is a description of each map.

1910: Review of the 1910 map indicates that a dwelling unit was located on the subject site. Across South Avenue to the north of the subject site is Jos Harrigan Coal, Wood, Hay and Feed. Further north on North Avenue are Century Rubber Trading Company and Bias Waterproof Fabric Company.

1951: The 1951 map indicates that a dwelling unit occupies the subject site. To the west across South Avenue is J.D. Loizeaux Lumber Company. To the north of the subject site is an auto painting facility.

1956: Review of the 1956 map reveals that a dwelling unit occupies the subject site. To the southwest of the site is an auto service station. J.D. Loizeaux Lumber Company is located to the west of the subject site, and dwelling units to the south.

1963: The subject site appears vacant according to the 1963 map. The dwelling unit which was identified in the earlier maps seems to have been demolished. No significant changes are observed in the surrounding properties as compared to the 1956 map.

1982: Review of the 1982 map indicates some development on the subject site. The current L-shaped building now appears on the subject site. No significant changes were observed in the surrounding properties as compared to the 1963 map.

A copy of the reviewed Sanborn maps are included in Attachment 6.

4.0 INVESTIGATION OF THE SURROUNDING PROPERTIES

Based on the Preliminary Assessment, it is clear that the PCE and TCE ground water contamination did not originate from the 912 South Avenue property. Therefore, ESA investigated other facilities surrounding the subject site to determine if the contamination of concern was a regional groundwater problem.

The following facilities were investigated by means of reviewing NJDEP BUST case files. These facilities were chosen based on their identification as having leaking underground storage tanks in the government records search or were under known investigation through information obtained from Mr. Leitow. The findings of each case file review is described below.

Facility & NJDEP Case #	Address	Approximate distance from the site (ft)	Relative direction from the site
Kellers Dry Cleaners Case # 90-03-21-1155	1201 South Ave.	1,250	Northeast
Netherwood Auto Repair Case # 91-11-21-1602-19	1000 South Ave.	500	Northeast
Queen City Fuel Co. Case # 90-07-13-2201	717 North Ave.	2,000	Southwest
Sunoco Station Case # 93-06-03-1012-36	South & Belvidere Ave.	1,000	Northeast
Mobil Service Station Case # 89-09-07-1346	1326 South Ave.	3,000	Northeast
Lockheed Electronics Co. ECRA Case # 90038	Route 22, Plainfield,	5,000	Northwest
Elizabeth Town Water Company	South Avenue	1000	Northeast

Mark Soutero 2-1995

The locations of these sites with reference to the subject site are illustrated in Figure 5 (Attachment 1).

4.1 G.O. Keller, Inc. (a.k.a. Kellers Dry Cleaners)

According to the report dated December 3, 1992, submitted by Shakti Consultants, Inc. to the Bureau of Underground Storage Tanks, three monitoring wells were installed on the property. The wells were screened "in this first water bearing zone" about 55 feet below surface, and sampled in part for volatile organic compounds (VO+15). The results show that PCE and other VOCs were detected in two of the three wells and TCE in one well. The following table lists the VOC results.

Parameter	MW-101	MW-102	MW-103
Tetrachloroethene (PCE)	1.8	NA	4.3
Trichloroethene (TCE)	ND	NA	1.9
1,1,1 Trichloroethane	8.6	NA	11
Chloroform	1.2	NA	ND

All results in ppb
ND - not detected
NA - not analyzed

In a May 4, 1993 letter submitted to NJDEP from Shakti Consultants, Inc., Shakti believes that the solvents found in the ground water at this site are not from on-site operations, but part of a regional ground water problem. The reference material is included in Attachment 7.

4.2 Netherwood Auto Repair Center

The Discharge Investigation and Corrective Action Report (DICAR), dated April 1, 1992, submitted by Aguilar Associates and Consultants, Inc., indicates that three monitoring wells were installed in response to the removal of five (5) underground storage tanks. These wells were installed to a depth of 29 feet in MW-1 and MW-2 and 53 feet in MW-3. The first round of sampling was conducted between December 31, 1991 and January 29, 1992. Analytical results indicate that BTEX compounds were detected in MW-1 and MW-2 at concentrations of 446 and 57 ppb, respectively. Tetrachloroethene was detected in MW-3 at a concentration of 49 ppb.

A second round of sampling was conducted on February 28, 1992 and water samples were collected from MW-1 and MW-3. Analytical results from MW-3 indicated the presence of tetrachloroethene at a concentration of 48 ppb.

According to the January 1994 "Addendum to the Remedial Action Progress Report", submitted by Environmental Compliance and Control, Inc., the monitoring wells were sampled once again on July 12, 1993. Analytical results of the water sample from MW-3 indicates the presence of tetrachloroethene at a concentration of 22 ppb.

This report also concludes that the PCE contamination detected originates off-site and is part of a regional PCE ground water problem. The referenced material is included in Attachment 8.

4.3 Queen City Fuel Oil Company

According to the March 7, 1991 report submitted by TTI Environmental Consulting, three monitoring wells were installed at the site located at 717 North Avenue to determine the quality of the groundwater beneath two abandoned underground storage tanks. The wells were installed to depths of 30 feet in MW-1 and 35 feet in MW-2 and MW-3. PCE was detected in all 3 wells and TCE in one well. Analytical results indicated the presence of the following VOCs:

Parameter	MW-1	MW-2	MW-3
Trichloroethene (TCE)	2	ND	ND
Tetrachloroethene (PCE)	57	91	98
1,1,1 Trichloroethane	2(J)	ND	ND
Chloroform	ND	2(J)	ND

All results in ppb
ND - not detected

The TTI report also states that the VOCs detected may be attributable to off-site sources and not on-site activities. The referenced material is included in Attachment 9.

4.4 Sunoco Station

Groundwater and Environmental Services, Inc. submitted a Remedial Investigation Report, dated October 15, 1993, to NJDEP based on the activities conducted at the Sunoco Station # 0006-8981, located at the intersection of South and Belvidere Avenues. Three monitoring wells were installed on May 11, 1993 to a depth of 28 below grade. The wells were sampled on two occasions, May 18, 1993 and August 17, 1994, and found to contain no PCE or TCE.

4.5 Mobil Service Station

ESA reviewed the Groundwater & Environmental Services, Inc. "Quarterly Sampling Report" dated May 22, 1991, for the Mobil Service Station. Analytical results of the ground water samples collected from ten wells on March 15, 1991, showed the presence of tetrachloroethene, at 15 ppb, in monitoring well MW-7 only.

Based on later correspondence/reports, it was found that two additional wells were installed. The depth of the 12 wells range between 16 to 25 feet. MW-7 was installed to a depth of 25 feet, which is one of their deepest wells. The referenced material is included in Attachment 10.

4.6 Former Lockheed Electronics Company

According to the information obtained from the report submitted by Sevee & Mayer Engineers, Inc., 17 monitoring wells and 9 peizometers were installed and sampled for VOCs. These wells/peizometers are installed in both the shallow and deep aquifers at the site. Two rounds of ground water sampling was conducted, in June 1992 and July 1992. Analytical results of the ground water samples indicate the presence of TCE and PCE in both aquifers.

4.7 Elizabeth Town Water Company

According to Mr. Sadowski, engineer of the Elizabeth Town Water Company, the Netherwood Well Field is comprised of twelve wells at an average depth of 350 feet below grade. TCE and PCE compounds were detected within the Netherwood Well Field. Ground water pumped from the wells is being treated for volatile organic compounds.

According to the Environmental Compliance & Control, Inc. January 1994 report referenced in Section 4.2 above, Mr. Sadowski also informed them that PCE has been found in all the Elizabeth Town Water Companies potable supply wells located in the Plainfield area since 1988.

5.0 CONCLUSIONS

Based on the site reconnaissance, the historical data review, the due diligence search of the site and surrounding properties, and the determination of ground water flow at the site, the following conclusions can be made:

1. Both the site reconnaissance and the historical site review show no current or prior operations which generated, stored or disposed of chlorinated solvents. Chlorinated solvents are generally found in degreasing and dry cleaning operations, the manufacturing of ink and paint removers, and in the preparation of fluorocarbons. The historical review does not indicate any of these types of operational activities to have existed on the site.

2. The subject property is not listed in any of the local, state and federal databases except for the FINDS database, which indicates the issuance of an air permit. The air permit was issued to Executive Cabinet Co. who manufactured wooden cabinets. The permit was for the control of saw dust. This activity does not contribute to the kind of contamination detected in the groundwater on the site.

3. One 550 gallon fuel oil tank was identified on the site in 1950 by the local Fire Department. This corresponds to the 1951 Sanborn map which indicates the presence of a dwelling unit on the site. The fuel oil tank identified by the Fire Department is most likely associated with the dwelling unit for heating purposes. However, since fuel oil was stored in the tank, the tank can be ruled out as a source of PCE and TCE contamination detected in the groundwater.

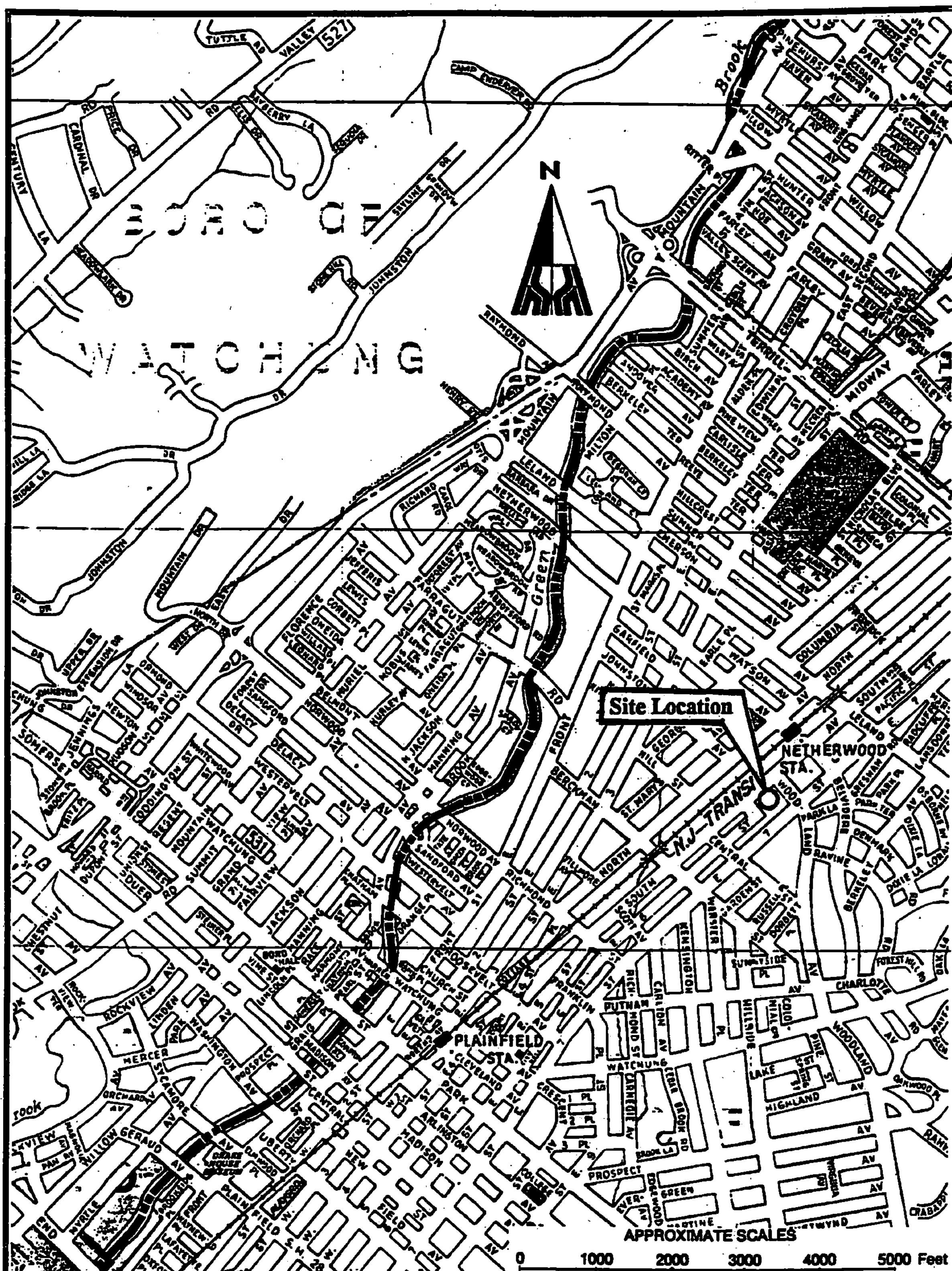
4. Review of NJDEP case files of nearby BUST facilities indicates that TCE and PCE contamination has been identified at sites with monitoring wells between 25 and 55 feet deep. A number of these facilities have proposed that the TCE and PCE contamination is in the deeper aquifer and not from their site, but due to off-site sources and is part of the regional ground water problem in the area.

5. A ground water contour map was generated from water level readings collected from the three on-site wells. Based on the contour map, ground water flow is to the east. This indicates that MW-1 is located upgradient, and almost at the northwestern property boundary. This well is located in the front parking lot next to the sidewalk. It is away from the building and any inside operational activities. MW-1 contained 38 ppb PCE which is at the same concentration as the most downgradient well, MW-3, which contained 41 ppb PCE. Based on this alone, it is clear that the PCE contamination is originating from an off-site source.

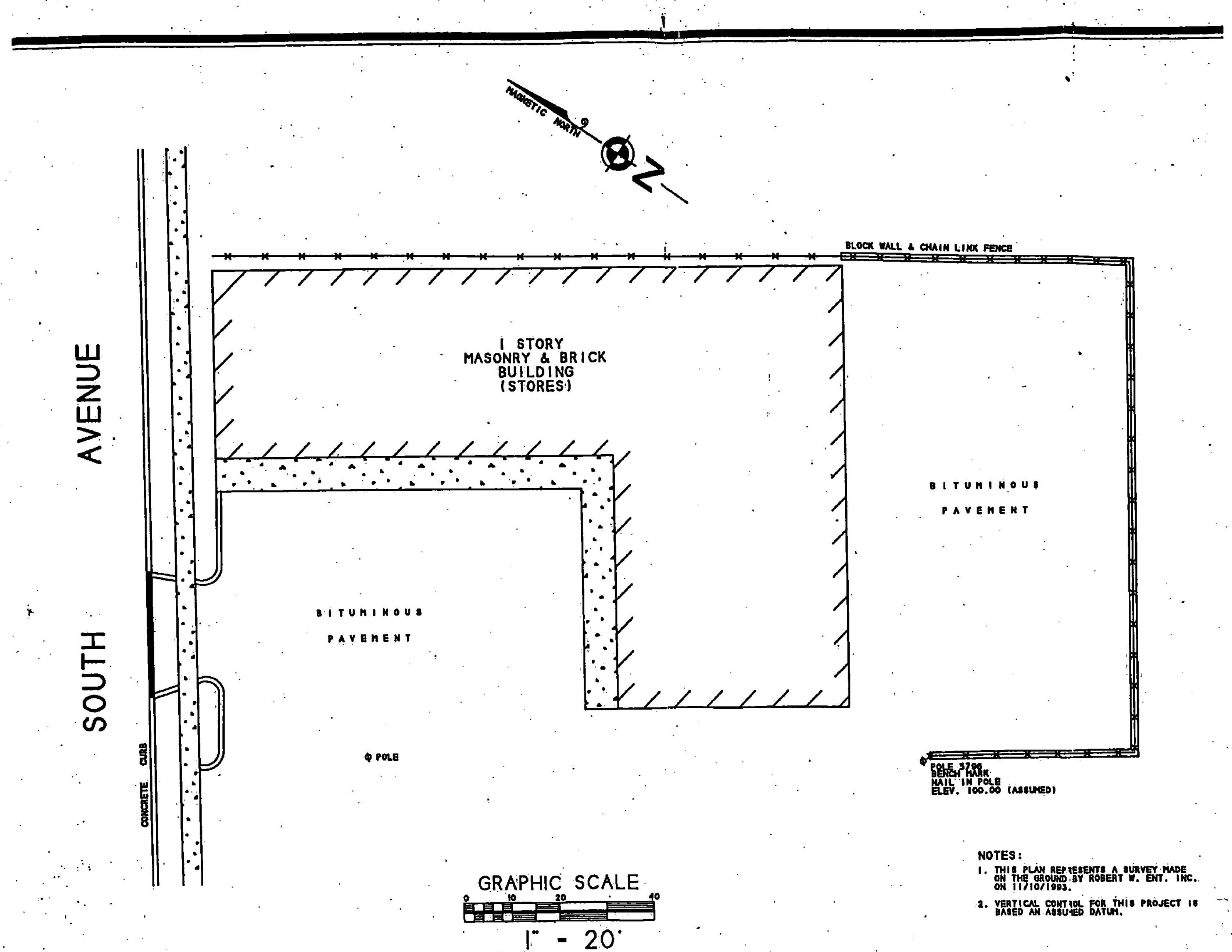
The above conclusions clearly show that the source of the PCE and TCE detected in the monitoring wells is not from current or historical on-site operational activities. It is rather from an off-site source(s) which has affected the deeper aquifer(s) in this area of Plainfield. ESA and Mr. Leitow believe that enough information is provided in this report to satisfy the NJDEP's preliminary site assessment requirements and therefore, propose no further action for this site. Consequently, it is requested that the NJDEP allow for the sealing of the monitor wells and the termination of the MOA.

Attachment 1

Figures



Environmental Strategies and Applications, Inc. 347 Elizabeth Avenue, Suite 100 Somerset, New Jersey 08873 908-469-8888	Figure 1 - Site Location Map 912 South Avenue City of Plainfield Union County, New Jersey



E.S.A.

STRATEGIES TO EASE YOUR ENVIRONMENTAL BURDEN

Figure 2

SITE MAP
912 SOUTH AVENUE
CITY OF PLAINFIELD
UNION COUNTY, N.J.

ENVIRONMENTAL STRATEGIES AND APPLICATIONS
260 ROUTE 202, SUITE 100
FLEMINGTON, N.J. 08822
(908) 782-0122

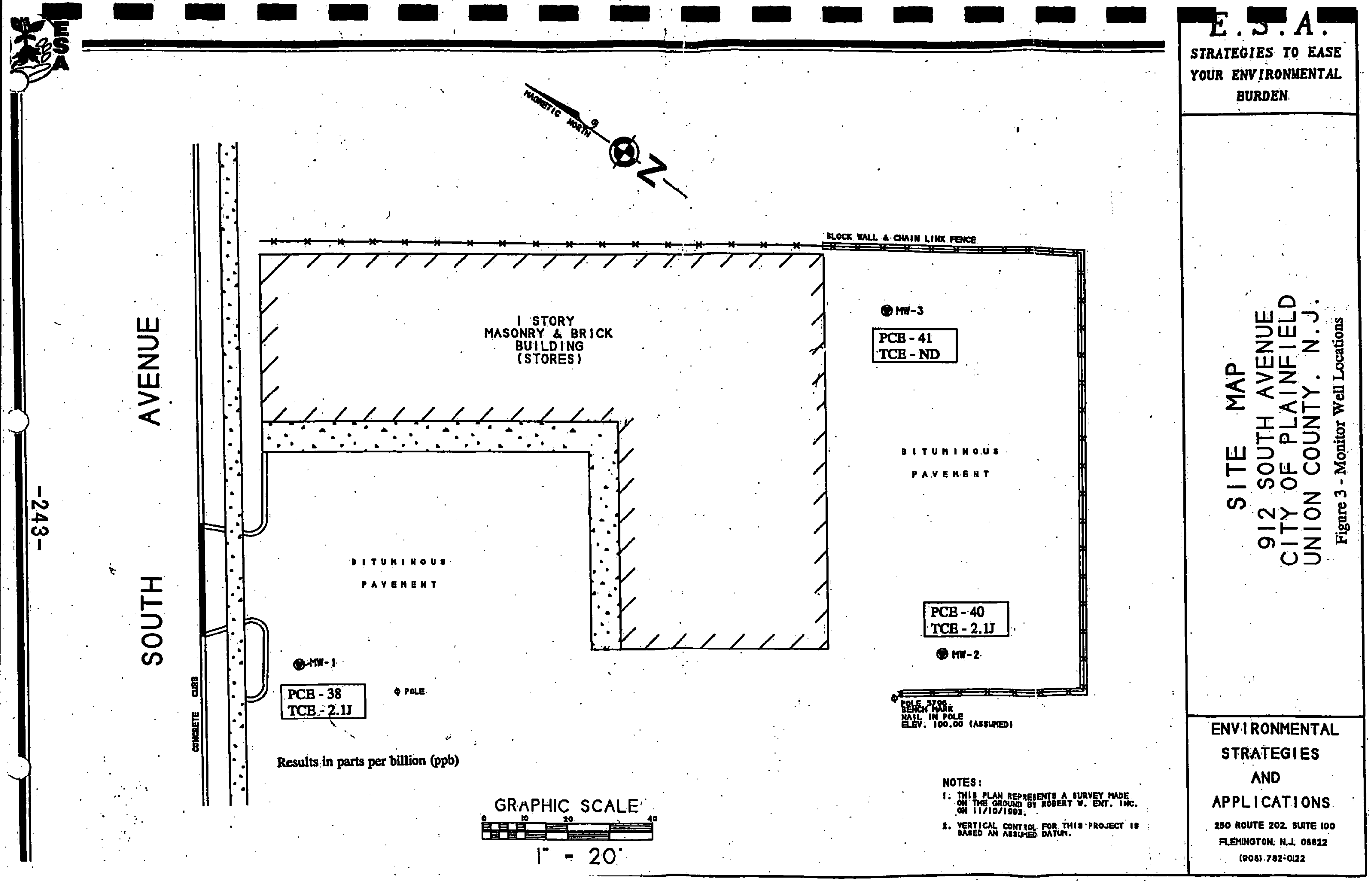
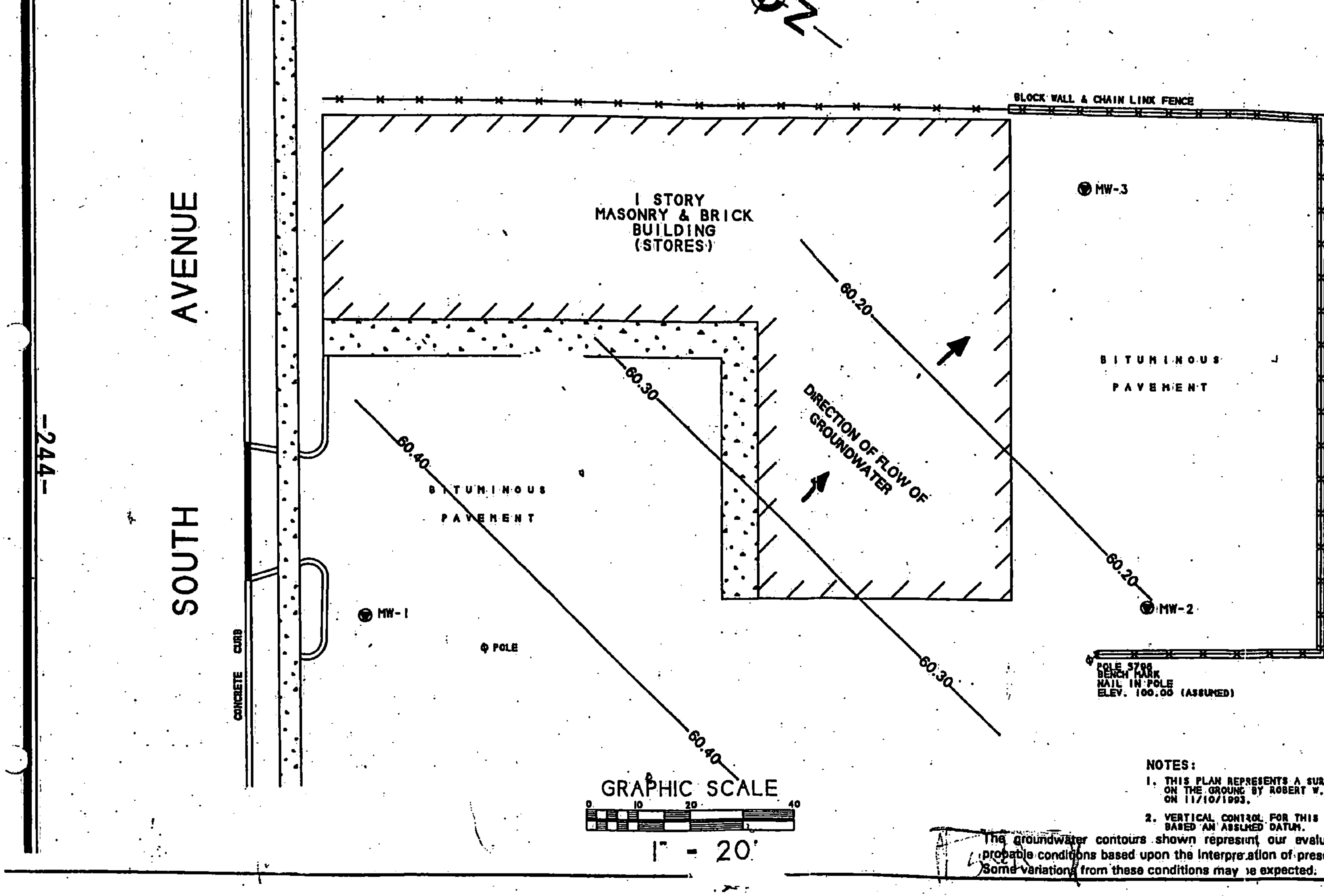


Figure 3 - Monitor Well Locations

STRATEGIES TO EASE YOUR ENVIRONMENTAL BURDEN

Well #	Depth of Groundwater*(Ft)	Elevation of PVC	Groundwater Elevation
MW-1	36.42	96.89	60.47
MW-2	39.22	99.43	60.21
MW-3	40.30	100.39	60.09



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NOTES:

1. THIS PLAN REPRESENTS A SURVEY MADE ON THE GROUND BY ROBERT W. ENT. INC. ON 11/10/1993.
2. VERTICAL CONTROL FOR THIS PROJECT IS BASED AN ASSUMED DATUM.

The groundwater contours shown represent our evaluation of the most probable conditions based upon the interpretation of presently available data. Some variations from these conditions may be expected.

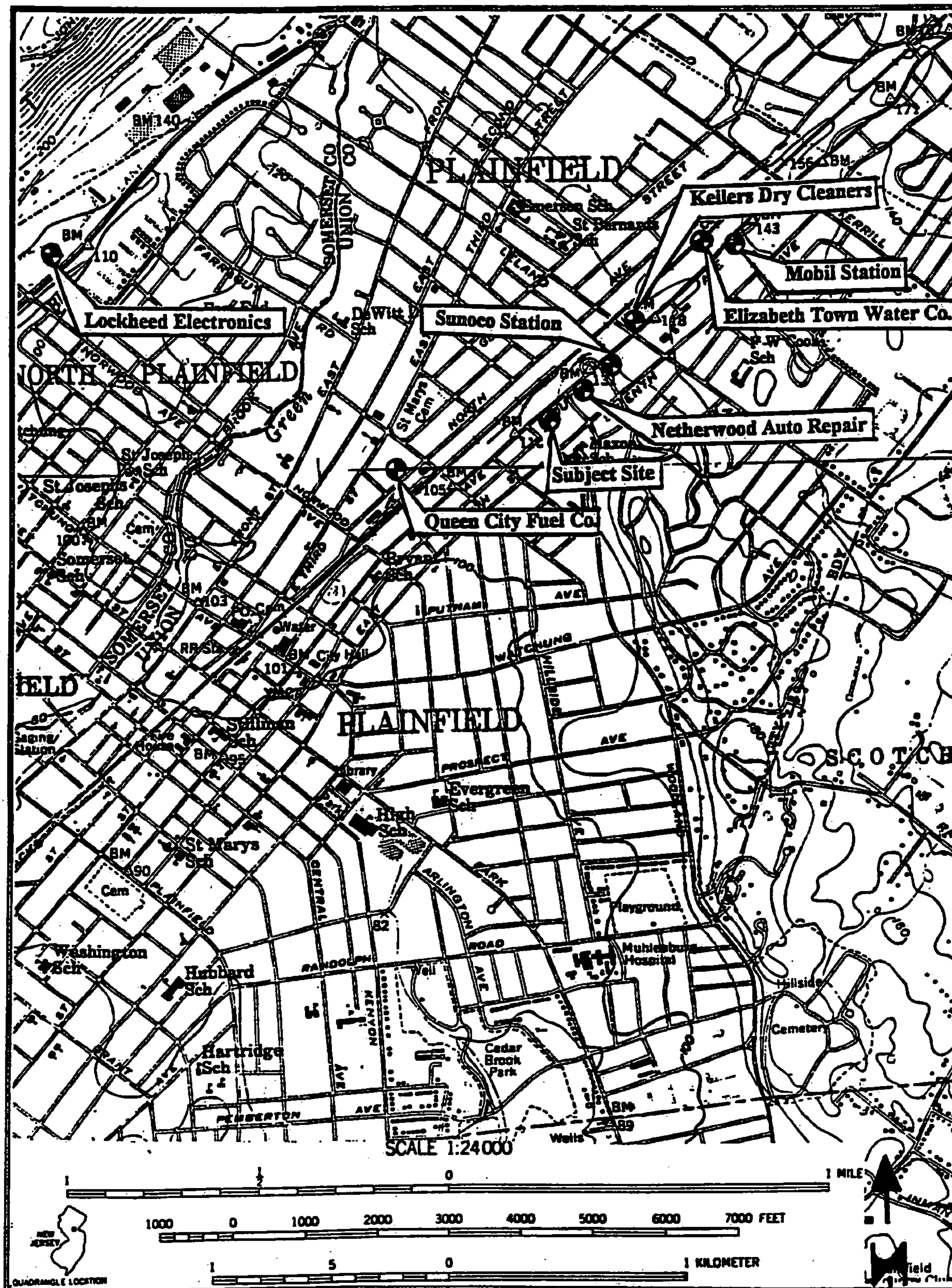
GROUNDWATER ELEVATION CONTOUR MAP

912 SOUTH AVENUE
CITY OF PLAINFIELD
UNION COUNTY, N.J.

Figure 4

ENVIRONMENTAL STRATEGIES AND APPLICATIONS

347 ELIZABETH AVE., SUITE 100
SOMERSET, N.J. 08873
(908) 873-0499



Environmental Strategies and Applications, Inc. 347 Elizabeth Avenue, Suite 100 Somerset, New Jersey 08873 908-469-8888	Figure 5 - Quad Map Locations of surrounding properties reviewed City of Plainfield Union County, New Jersey

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 - 42583
Atlas Sheet Coordinates 25 : 34 : 235

OWNER IDENTIFICATION - Owner LEITH, FREDRICK
Address 10 MONDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 1
County UNION Municipality ~~PLAINFIELD CITY~~ Lot No. 3 Block No. [illegible]
Address 911 SOUTH AVE.

TYPE OF WELL (as per Well Permit Categories) ~~MONITORING~~ Date well completed 3/2/93
Regulatory Program Requiring Well Case I.D. #
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 703-464-35

WELL CONSTRUCTION

Total depth drilled 39 ft.
Well finished to 39 ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted
If finished above grade, casing height (stick up) above land surface X ft.
Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	29'	4"	SC 40 - PVC
Outer Casing (Not Protective Casing)	—	—	—	
Screen (Note slot size)	29'	39'	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	28'	39'	8"	#2 GRAVEL
Annular Seal/Grout	26'	28'	8"	BENTOINTE
Method of Grouting	GRAVITY PLACEMENT			

Static water level after drilling 35'8" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: ~~SUBMERSIBLE~~ X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig AIR ROTARY
Name of Driller MARK HIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 725
Name of Drilling Company SAMSON & ROT WELL DRILLING

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-4" BLACK TOP
4"-8" BLUE STONE FILL
8"-11' DRY RED HARD PACKED SAND.
11'-20' RED SAND & GRAVEL W/SOME DAMP ZONES NO WATER FILL OVERNITE.
20'-32' DRY RED SAND W/GRAVEL & SOME BOULDERS
32'-39' WET [illegible]

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Hipp Date 3/24/93

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 42535
Atlas Sheet Coordinates ~~25 : 34 : 235~~

OWNER IDENTIFICATION - Owner LEITOW. FREDRICK
Address 10 MUNDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 3
County UNION Municipality ~~PLAINFIELD CITY~~ Lot No. 3 Block No. 621
Address 911 SOUTH AVE.

TYPE OF WELL (as per Well Permit Categories) ~~MONITORING~~ Date well completed 2/19/93
Regulatory Program Requiring Well ______ Case I.D. # ______
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 908-464-35

WELL CONSTRUCTION

Total depth drilled 42 ft.
Well finished to 41'7 ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.

Well was finished: ☐ above grade ☒ flush mounted

If finished above grade, casing height (stick up) above land surface X ft.

Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	31'7"	4"	SC 40-PVC
Outer Casing (Not Protective Casing)	—	—		
Screen (Note slot size)	31'7"	41'7"	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	30'	41'7	8"	#2 GRAVEL
Annular Seal/Grout	28'	30'	8"	BENTOINTE
Method of Grouting	GRAVITY PLACEMENT			

Static water level after drilling 39'8" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig AIR ROTARY
Name of Driller MARK HIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 735
Name of Drilling Company COOPER & HIPP WELL DRILLING

GEOLOGIC LOG

(Copies of other geologic logs and/or geophysical logs should be attached.)

0-4" BLACK TOP
4"-6' BOULDERS & DRY RED SAND
6'-12' RED SAND & GRAVEL
12'-22' DAMP ZONE: HARD PACKED RED SAND W/ SOME CLAY
22'-33' FIRM RED DRY SAND W/SOME BOULDERS
33'-42' WET COARSE SAND.

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Hipp Date 3/24/93

-247-11

DWR-138 M
12/91

New Jersey Department of Environmental Protection and Energy
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 25 42584
Atlas Sheet Coordinates 25 34 235

OWNER IDENTIFICATION - Owner LEITOW, FREDRICK
Address 10 MUNDY LANE
City WARREN State NJ Zip Code 07059

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 2
County UNION Municipality ~~PLAINFIELD CITY~~ Lot No. 3 Block No. 321
Address 912 SOUTH AVE

TYPE OF WELL (as per Well Permit Categories) ~~MONITORING~~ Date well completed 2/26/93
Regulatory Program Requiring Well ______ Case I.D. # ______
CONSULTING FIRM/FIELD SUPERVISOR (if applicable) TOM FLAHIVE Tele. # 908-464-351

WELL CONSTRUCTION
Total depth drilled 43 ft.
Well finished to 4?8" ft.
Borehole diameter:
Top 8 in.
Bottom 8 in.
Well was finished: ☐ above grade ☒ flush mounted
If finished above grade, casing height (stick up) above land surface X ft.
Was steel protective casing installed? ☐ Yes ☒ No

	Depth to Top (ft.) [From land surface]	Depth to Bottom (ft.)	Diameter (inches)	Type and Material
Inner Casing	0	33	4"	SC 40-PVC
Outer Casing (Not Protective Casing)	—	—	—	
Screen (Note slot size)	33'	43'	4"	.010 PVC
Tail Piece	—	—	—	
Gravel Pack	31'	43'	8"	#2 GRAVEL
Annular Seal/Grout	29'	31'	8"	BENTONITE
Method of Grouting	GRAVITY PLACEMENT			

Static water level after drilling 38.6" ft.
Water level was measured using ELECT LINE
Well was developed for 1 hours at 5 gpm
Method of development SUBMERSIBLE
Was permanent pumping equipment installed? ☐ Yes ☒ No
Pump capacity X gpm
Pump type: X
Drilling Method AIR ROTARY
Drilling Fluid NONE Type of Rig SCHRAMM
Name of Driller MARK HIPP
Health and Safety Plan submitted? ☒ Yes ☐ No
Level of Protection used on site (circle one) None D C B A
N.J. License No. 735
Name of Drilling Company COOPER & HIPP WELL DRILLING

GEOLOGIC LOG (Copies of other geologic logs and/or geophysical logs should be attached.)

0-3" BLACK TOP
3"-5' LOOSE BOULDERS & DRY RED SAND.
5'-11' RED SAND & GRAVEL
11'-26' HARD PACKED SAND, GRAVEL, W/SOME CLAY & DAMP ZONES.
26'-35' HARD PACKED SAND W/ BOULDERS.
35'-43' WET COARSE RED SAND & GRAVEL.

I certify that I have drilled the above-referenced well in accordance with all well permit requirements and all applicable State rules and regulations.

Driller's Signature Mark Hipp Date 3/1/93

COPIES: White & Green - DEPE Canary - Driller Pink - Owner Goldenrod - Health Dept.

W.A.T.E.R. WORKS LABORATORY INC.
364 GLENWOOD AVE., EAST ORANGE, NEW JERSEY 07017
NJ LAB CERTIFICATION # 07673

GC/MS VOLATILE ORGANIC ANALYSIS REPORT

CLIENT : ANCO
PROJECT: HYPER HARRY'S

DATE SAMPLED :	3/20/93	CLIENT ID # :	MW-1
DATE RECEIVED :	3/20/93	SAMPLE NUMBER :	37093
DATE ANALYZED :	03/22/93	FILE NAME :	>A8766
DILUTION FACTOR:	1.00	ANALYST :	MM

COMPOUND	UG/L	MDL	COMPOUND	UG/L	MDL	
Chloromethane	ND	5	Trichloroethene	2.1 J	5	
Bromomethane	ND	5	Dibromochloromethane	ND	5	
Vinyl Chloride	ND	5	1,1,2-Trichloroethane	ND	5	
Chloroethane	ND	5	Benzene	ND	5	
Methylene Chloride	ND	5	trans-1,3-Dichloropropene	ND	5	
Trichlorofluoromethane	ND	5	Bromoform	ND	5	
2-Chloroethylvinyl ether	ND	5	Tetrachloroethene	38	5	PCE
1,1-Dichloroethene	ND	5	1,1,2,2-Tetrachloroethane	ND	5	
1,1-Dichloroethane	ND	5	Toluene	ND	5	
1,2-Dichloroethene (total)	ND	5	Chlorobenzene	ND	5	
Chloroform	ND	5	Ethylbenzene	ND	5	
1,2-Dichloroethane	ND	5	o-Xylene	ND	5	
1,1,1-Trichloroethane	ND	5	m,p-Xylene	ND	5	
Carbon Tetrachloride	ND	5	1,3-Dichlorobenzene	ND	5	
Bromodichloromethane	ND	5	1,2-Dichlorobenzene	ND	5	
1,2-Dichloropropane	ND	5	1,4-Dichlorobenzene	ND	5	
cis-1,3-Dichloropropene	ND	5				

MDL = Method Detection Limit
(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

..A.T.E.R. WORKS LABORATORY INC.
.WOOD AVE., EAST ORANGE, NEW JERSEY 07017
NJ LAB CERTIFICATION # 07673

GC/MS VOLATILE ORGANIC ANALYSIS REPORT

.ENT : ANCO
.ROJECT: HYPER HARRY'S

DATE SAMPLED	3/20/93	CLIENT ID #	MW-2
DATE RECEIVED	3/20/93	SAMPLE NUMBER	37094
DATE ANALYZED	03/22/93	FILE NAME	>A0767
DILUTION FACTOR	1.00	ANALYST	MM

COMPOUND	UG/L	MDL	COMPOUND	UG/L	MDL
Chloromethane	ND	5	Trichloroethene	2.1 J	5
Bromomethane	ND	5	Dibromochloromethane	ND	5
Vinyl Chloride	ND	5	1,1,2-Trichloroethane	ND	5
Chloroethane	ND	5	Benzene	ND	5
Methylene Chloride	ND	5	trans-1,3-Dichloropropene	ND	5
Trichlorofluoromethane	ND	5	Bromoform	ND	5
2-Chloroethylvinyl ether	ND	5	Tetrachloroethane	40	5 PCE
1,1-Dichloroethene	ND	5	1,1,2,2-Tetrachloroethane	ND	5
1,1-Dichloroethane	ND	5	Toluene	ND	5
1,2-Dichloroethene (total)	ND	5	Chlorobenzene	ND	5
Chloroform	ND	5	Ethylbenzene	ND	5
1,2-Dichloroethane	ND	5	o-Xylene	ND	5
1,1,1-Trichloroethane	ND	5	m,p-Xylene	ND	5
Carbon Tetrachloride	ND	5	1,3-Dichlorobenzene	ND	5
Bromodichloromethane	ND	5	1,2-Dichlorobenzene	ND	5
1,2-Dichloropropane	ND	5	1,4-Dichlorobenzene	ND	5
cis-1,3-Dichloropropene	ND	5			

MDL = Method Detection Limit
(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

W.A.T.E.R. WORKS LABORATORY INC.
364 GLENWOOD AVE., EAST ORANGE, NEW JERSEY 07017
NJ LAB CERTIFICATION # 07673

GC/MS SEMI-VOLATILE ORGANIC ANALYSIS REPORT

CLIENT : ANCO
PROJECT: HYPER HARRY'S

DATE SAMPLED : 3/20/93
DATE RECEIVED : 3/20/93
DATE ANALYZED : 03/23/93
DILUTION FACTOR: 1.05

CLIENT ID # : MW-2
SAMPLE NUMBER : 37094
FILE NAME : >B3400
ANALYST : MP

COMPOUND	UG/L	MDL
N-Nitrosodimethylamine	ND	11
Aniline	ND	11
bis(-2-Chloroethyl)Ether	ND	11
1,3-Dichlorobenzene	ND	11
1,4-Dichlorobenzene	ND	11
Benzyl Alcohol	ND	11
1,2-Dichlorobenzene	ND	11
bis(2-chloroisopropyl)Ether	ND	11
N-Nitroso-Di-n-Propylamine	ND	11
Hexachloroethane	ND	11
Nitrobenzene	ND	11
Isophorone	ND	11
Benzoic Acid	ND	11
bis(-2-Chloroethoxy)Methane	ND	11
1,2,4-Trichlorobenzene	ND	11
Naphthalene	ND	11
4-Chloroaniline	ND	11
Hexachlorobutadiene	ND	11
2-Methylnaphthalene	ND	11
Hexachlorocyclopentadiene	ND	11
2-Chloronaphthalene	ND	11
2-Nitroaniline	ND	11
Dimethyl Phthalate	ND	11
Acenaphthylene	ND	11
3-Nitroaniline	ND	11
Acenaphthene	ND	11
Azobenzene	ND	11
Dibenzofuran	ND	11

COMPOUND	UG/L	MDL
2,6-Dinitrotoluene	ND	11
2,4-Dinitrotoluene	ND	11
Diethylphthalate	ND	11
4-Chlorophenyl-phenlyether	ND	11
Fluorene	ND	11
4-Nitroaniline	ND	11
N-Nitrosodiphenylamine	ND	11
4-Bromophenyl-phenylether	ND	11
Hexachlorobenzene	ND	11
Phenanthrene	ND	11
Anthracene	ND	11
Di-n-Butylphthalate	ND	11
Fluoranthene	ND	11
Benzidine	ND	11
Pyrene	ND	11
Butylbenzylphthalate	ND	11
3,3'-Dichlorobenzidine	ND	11
Benzo(a)Anthracene	ND	11
Chrysene	ND	11
bis(2-Ethylhexyl)Phthalate	ND	11
Di-n-Octyl Phthalate	ND	11
Benzo(b)Fluoranthene	ND	11
Benzo(k)Fluoranthene	ND	11
Benzo(a)Pyrene	ND	11
Indeno(1,2,3-cd)Pyrene	ND	11
Dibenzo(a,h)Anthracene	ND	11
Benzo(g,h,i)Perylene	ND	11

(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

W.A.T.E.R. WORKS LABORATORY INC.
364 GLENWOOD AVE., EAST ORANGE, NEW JERSEY 07017
NJ LAB CERTIFICATION # 07673

GC/MS VOLATILE ORGANIC ANALYSIS REPORT

CLIENT : ANCO
PROJECT: HYPER HARRY'S

DATE SAMPLED	: 3/20/93	CLIENT ID #	: MW-3
DATE RECEIVED	: 3/20/93	SAMPLE NUMBER	: 37095
DATE ANALYZED	: 03/22/93	FILE NAME	: >A0760
DILUTION FACTOR:	1.00	ANALYST	: MM

COMPOUND	UG/L	MDL
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	5
Chloroethane	ND	5
Methylene Chloride	ND	5
Trichlorofluoromethane	ND	5
2-Chloroethylvinyl ether	ND	5
1,1-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
1,2-Dichloroethene (total)	ND	5
Chloroform	ND	5
1,2-Dichloroethane	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
Bromodichloromethane	ND	5
1,2-Dichloropropane	ND	5
cis-1,3-Dichloropropene	ND	5
Trichloroethene	ND	5
Dibromochloromethane	ND	5
1,1,2-Trichloroethane	ND	5
Benzene	ND	5
trans-1,3-Dichloropropene	ND	5
Bromoform	ND	5
Tetrachloroethene	41	5 PCE
1,1,2,2-Tetrachloroethane	ND	5
Toluene	ND	5
Chlorobenzene	ND	5
Ethylbenzene	ND	5
o-Xylene	ND	5
m,p-Xylene	ND	5
1,3-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5

MDL = Method Detection Limit
(J) Indicates detected below MDL
(B) Indicates also present in blank
(ND) Indicates compound not detected

364 Glenwood Ave., East Orange, NJ 07017
(201) 678-3787 FAX (201) 678-6779

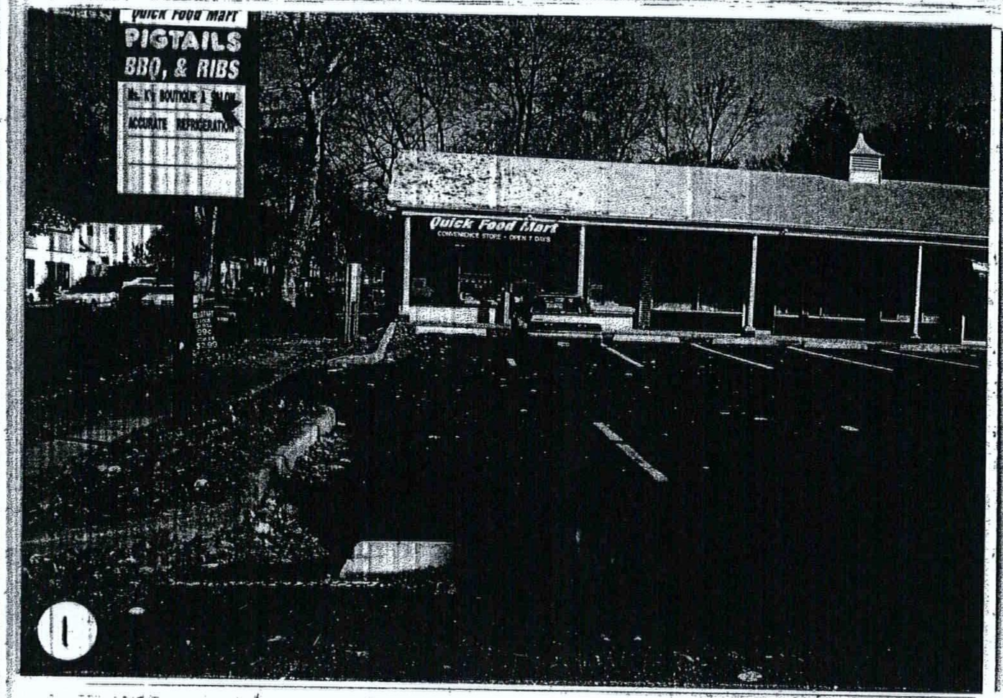
PESTICIDE ANALYSIS REPORT

DATE :	MARCH 24, 1993		
CLIENT:	ANCO ENVIRONMENTAL		
PROJECT:	HYPER HARRY'S		
DATE SAMPLED :	3/20/93	D. F.	1
DATE RECEIVED :	3/20/93	SAMPLE VOLUME (ML)	970
DATE EXTRACTED:	3/22/93	TECH:	JD
DATE ANALYZED :	3/23/93	COLUMN:	RTX-5
MATRIX :	AQUEOUS		
CLIENT ID #		MW-3	
SAMPLE #		37095	

PARAMETER	MDL	
ALDRIN	0.29	ND
alpha-BHC	0.28	ND
beta-BHC	0.29	ND
delta-BHC	0.28	ND
gamma-BHC	0.29	ND
CHLORDANE	0.20	ND
4,4'-DDD	0.24	ND
4,4'-DDE	0.26	ND
4,4'-DDT	0.20	ND
DIELDRIN	0.26	ND
ENDOSULFAN I	0.27	ND
ENDOSULFAN II	0.30	ND
ENDOSULFAN SULFATE	0.24	ND
ENDRIN	0.25	ND
ENDRIN ALDEHYDE	0.37	ND
ENDRIN KETONE	0.25	ND
HEPTACHLOR	0.30	ND
HEPTACHLOR EPOXIDE	0.28	ND
METHOXYCHLOR	0.30	ND
TOXAPHENE	1.33	ND

Analyzed By Method 608

All Results Reported As ug/L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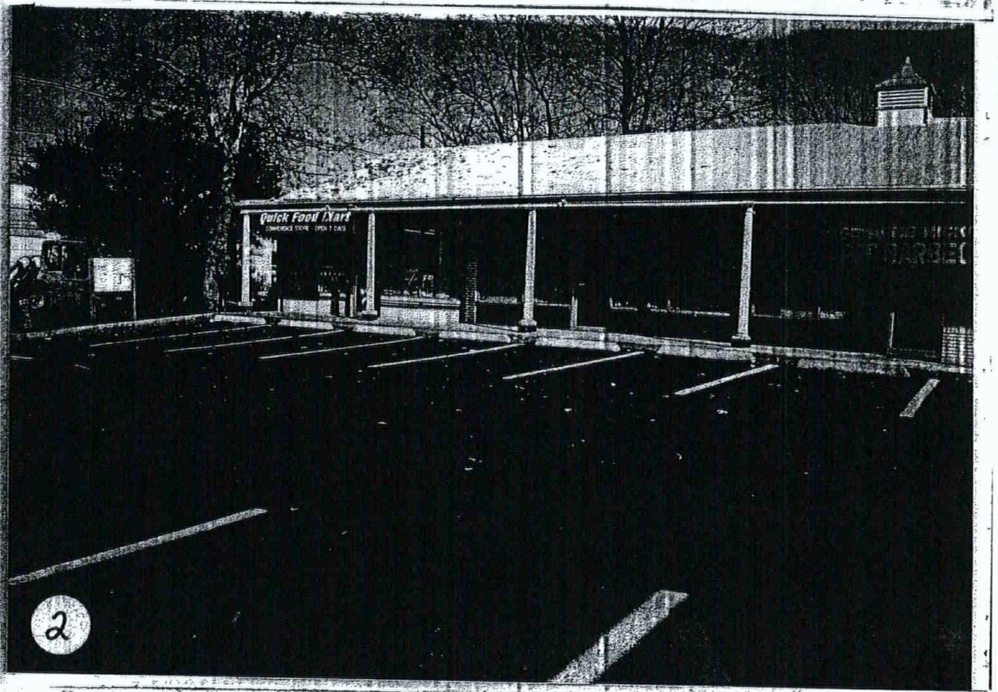
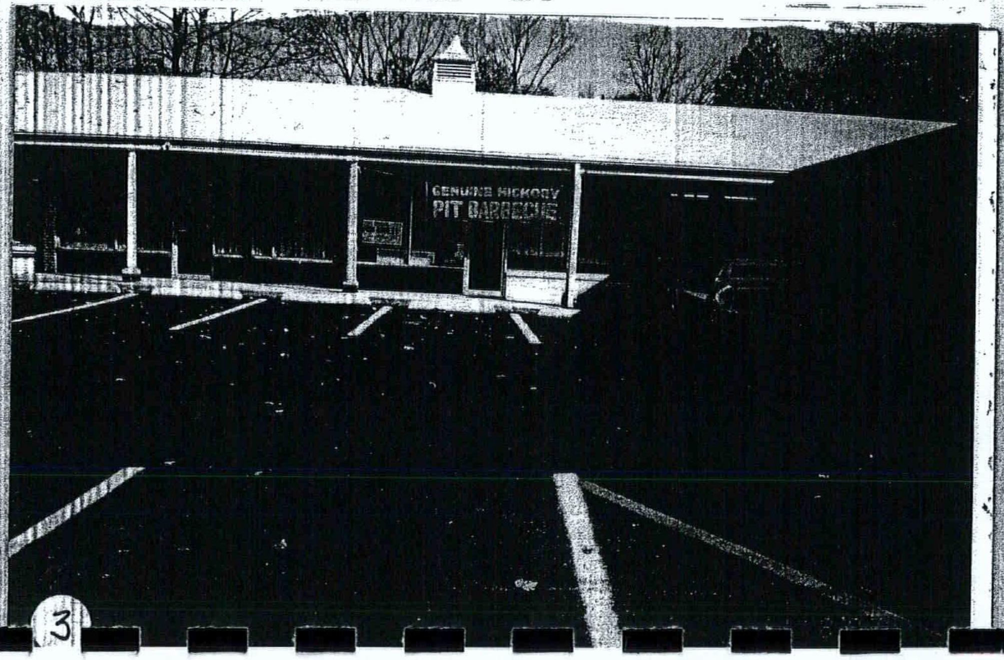
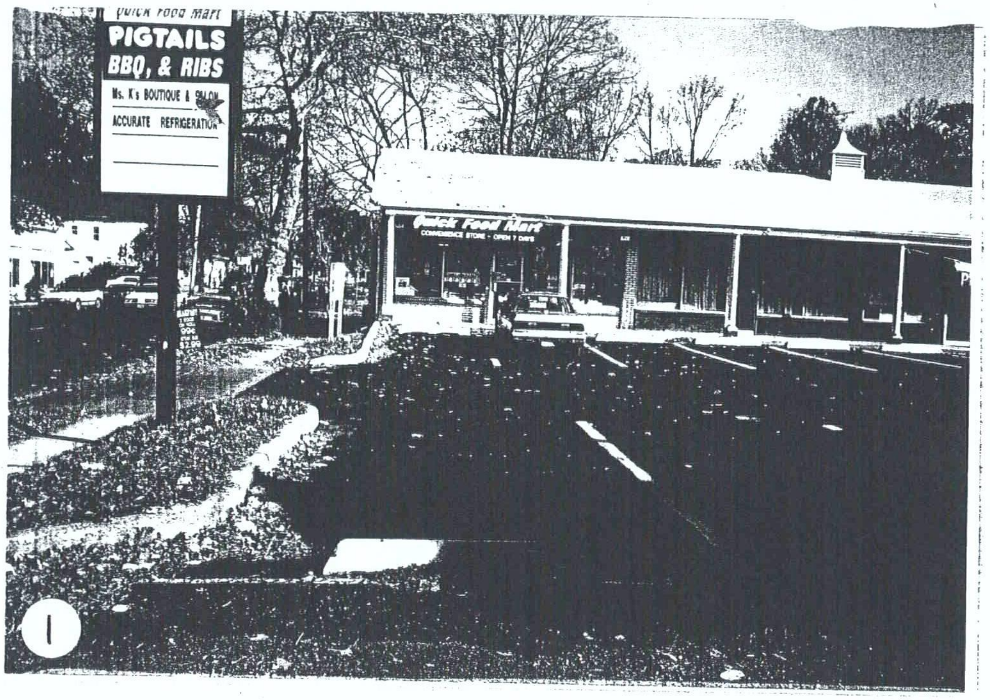
PIGTAILS
BBQ, & RIBS
ACCURATE REFRIGERATION
Quick Food Mart
1

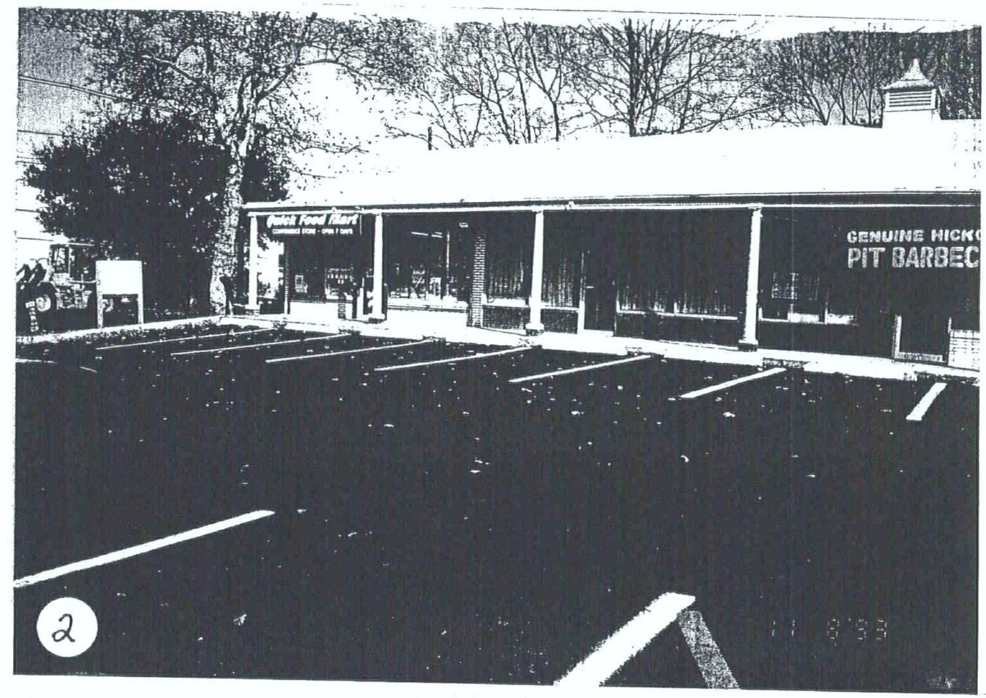

Quick Food Mart
2

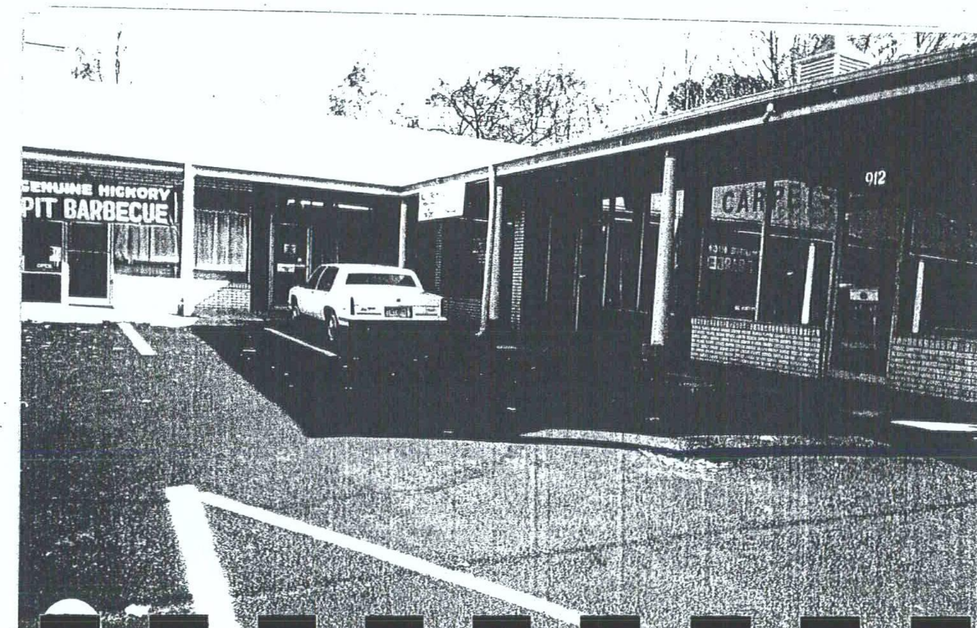

GENUINE HICKORY
PIT BARBECUE
3


GENUINE HICKORY
PIT BARBECUE

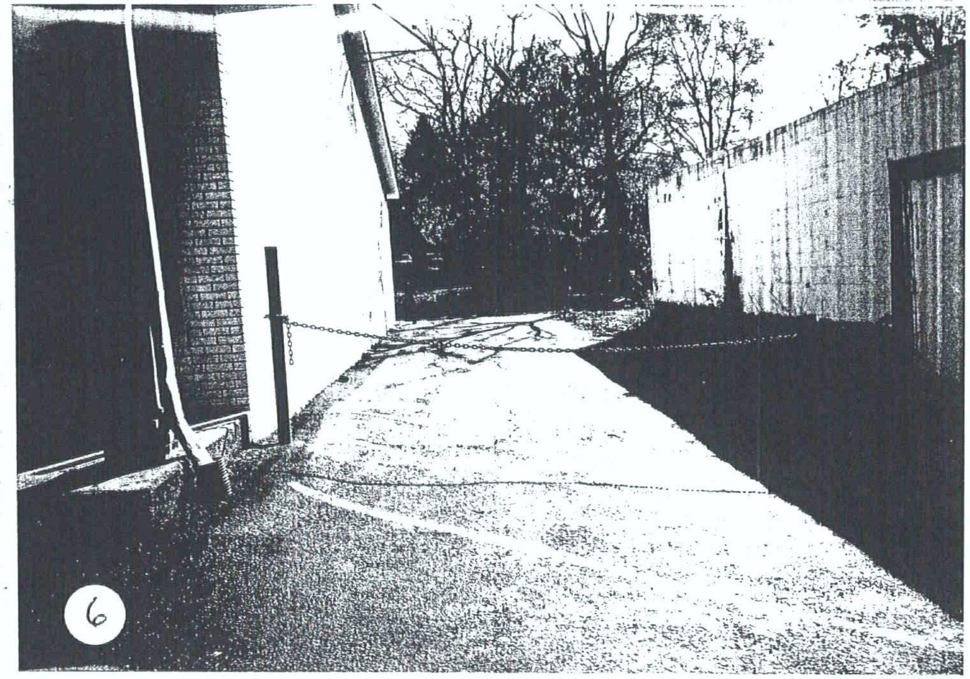
ARCHIVAL PRESERVERS








CARPETS
912
CARPETS
5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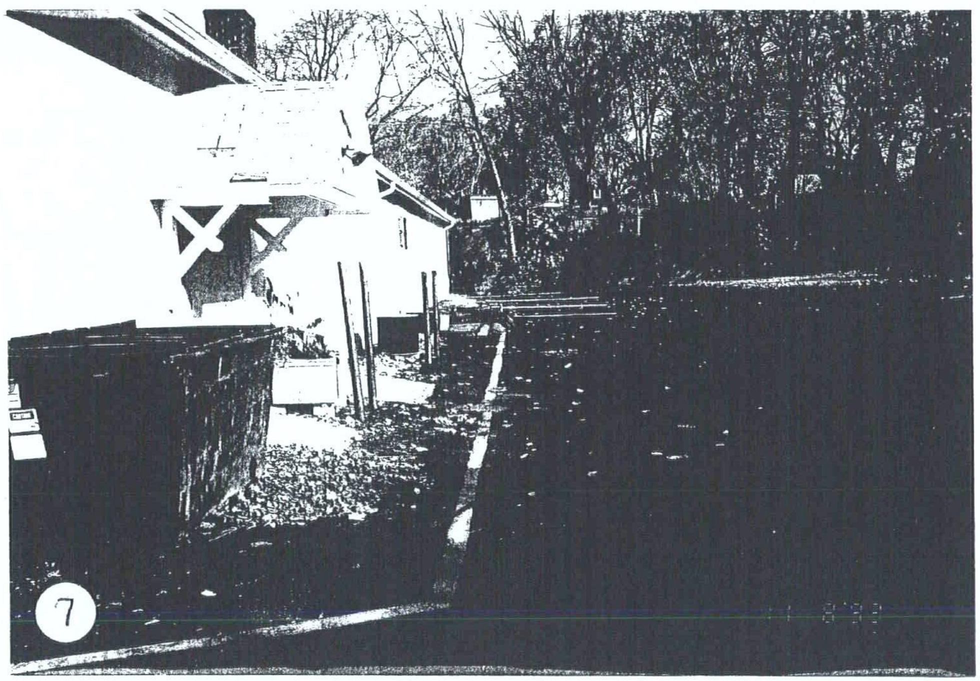
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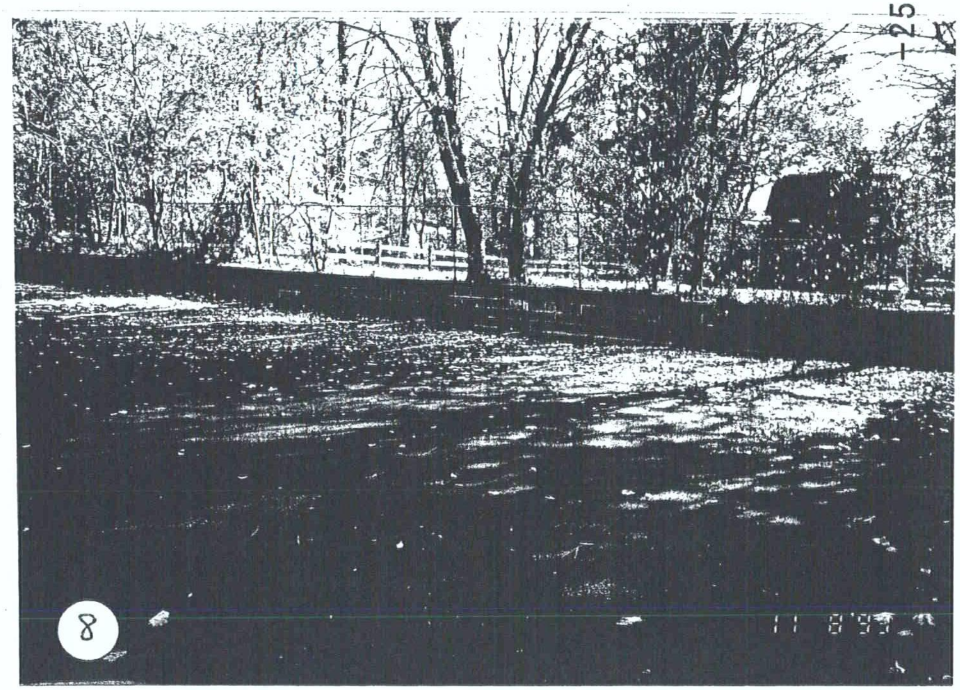

8

Attachment 4

State & Federal Government Report

The EDR-Radius Map™ Report

Leitow Property/x392
912 South Ave.
Plainfield, NJ 07061

November 08, 1993

Inquiry Number: 34607.1

Environmental Data Resources, Inc.

Creators of Toxicheck/®

***The* Source For Environmental Risk Management Data**

3530 Post Road
Southport, Connecticut 06490

Nationwide Customer Service

Telephone: 1-800-352-0050
Facsimilie: 1-800-231-6802

THE EDR RADIUS MAP™ REPORT

The EDR RADIUS MAP™ Report is a screening tool which maps sites with potential or existing environmental liabilities. Specified government databases are searched in accordance with the ASTM Standard (E 1527) or custom specifications provided by the user.

The EDR RADIUS MAP™ Report includes the following three maps:

Topographic Map -- 4 square mile area:

- o Displays a 2 mile radius around the target property.
- o Displays the USGS topographic contours and selected road features (i.e., major street names, and hydrographic data).

Detail Map:

- o Displays a 1/4 mile radius or customer specified radius around the target property and provides the user a "close-up" view.
- o Includes all geographic attributes available in EDR's computer mapping system (e.g., street names, address ranges, etc.).
- o Helps the user locate "orphan" sites, those sites with insufficient address information such that they can only be identified as within the zip code, city, or county of the target property.

Overview Map:

- o Displays a 1 mile (ASTM Standard) or customer specified radius around the target property.
- o Includes major geographic attributes available in EDR's computer mapping system (e.g., street names, available hydrography, etc.).

Please call EDR Nationwide Customer Service at
1-800-352-0050 (8am - 8pm EST)
with questions or comments about your report.

Thank you for your business!

Disclaimer

EDR makes no representation or warranty regarding the accuracy, quality or completeness of any data provided by governmental or other entity used by EDR in the preparation of its reports. The customer shall take full responsibility for the use of EDR reports. **No warranty of merchantability or of fitness for particular purpose, expressed or implied, shall apply and EDR specifically disclaims the making of any such warranties.** In no event shall EDR be liable to anyone for special, incidental, consequential or exemplary damages.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Last Contact: To maintain currency of the following federal and state databases, EDR contacts the appropriate govenmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day requirement of the ASTM standard.

FEDERAL ASTM RECORDS:

CERCLIS: Comprehensive Environmental Response, Compensation and Liability Information System; Source: United States Environmental Protection Agency (USEPA). CERCLIS contains information on sites identified by the USEPA as abandoned, inactive or uncontrolled hazardous waste sites which may require cleanup.

Date of Government Version in NEDIS: 08/31/93
Date Made Active in NEDIS: 10/20/93
Date of Data Arrival at EDR: 09/12/93
Elapsed ASTM days: 38

ERNS: Emergency Response Notification System; Source: USEPA and the National Reponse Center of the US Coast Guard. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version in NEDIS: 06/30/93
Date Made Active in NEDIS: 10/29/93
Date of Data Arrival at EDR: 09/13/93
Elapsed ASTM days: 46

HMIRS: Hazardous Materials Incident Report System; Source: United States Department of Transportation (DOT). HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version in NEDIS: 12/31/92
Date Made Active in NEDIS: 05/10/93
Date of Data Arrival at EDR: 04/19/93
Elapsed ASTM days: 21

NPL: National Priorities List (Superfund); Source: USEPA. The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program.

Date of Government Version in NEDIS: 05/01/93
Date Made Active in NEDIS: 07/01/93
Date of Data Arrival at EDR: 05/27/93
Elapsed ASTM days: 35

RCRIS: Resource Conservation and Recovery Information System; Source: USEPA. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Date of Government Version in NEDIS: 06/30/93
Date Made Active in NEDIS: 10/20/93
Date of Data Arrival at EDR: 08/16/93
Elapsed ASTM days: 65

FEDERAL NON-ASTM RECORDS:

FINDS: Facility Index System; Source: USEPA. FINDS contains both facility information and "pointers" to other sources that contain more detail. These include: RCRIS, PCS, AIRS, FATES (FTTS), CERCLIS, DOCKET, FURS (Federal Underground Injection Control), FRDS, SIA (Surface Impoundments), CICIS (TSCA Chemicals in Commerce Information System), PADS, RCRA-J (medical waste transporters/disposers), TRIS and TSCA.

Date of Government Version in NEDIS: 06/15/93

PADS: PCB Activity Database; Source: USEPA. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version in NEDIS: 09/29/92

RAATS: RCRA Administration Action Tracking System; Source: USEPA. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA.

Date of Government Version in NEDIS: 06/15/93

TRIS: Toxic Release Inventory System; Source: USEPA. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version in NEDIS: 12/31/90

TSCA: Toxic Substances Control Act; Source: USEPA. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site. USEPA has no current plan to update and/or re-issue this database.

Date of Government Version in NEDIS: 05/15/86

STATE ASTM RECORDS:

LUST: Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version in NEDIS: 06/19/92 | Date of Data Arrival at EDR: 06/25/92
Date Made Active in NEDIS: 09/17/92 | Elapsed ASTM days: 84

SHWS: State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version in NEDIS: 06/30/92 | Date of Data Arrival at EDR: 11/23/92
Date Made Active in NEDIS: 02/15/93 | Elapsed ASTM days: 84

SWF/LS: Solid Waste Facilities/Landfill Sites. SWF/LS type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Section 2004 criteria for solid waste landfills or disposal sites.

Date of Government Version in NEDIS: 06/18/93 | Date of Data Arrival at EDR: 09/03/93
Date Made Active in NEDIS: 10/27/93 | Elapsed ASTM days: 54

UST: Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Information in NEDIS varies by state program.

Date of Government Version in NEDIS: 07/15/92 | Date of Data Arrival at EDR: 08/17/92
Date Made Active in NEDIS: 11/09/92 | Elapsed ASTM days: 84

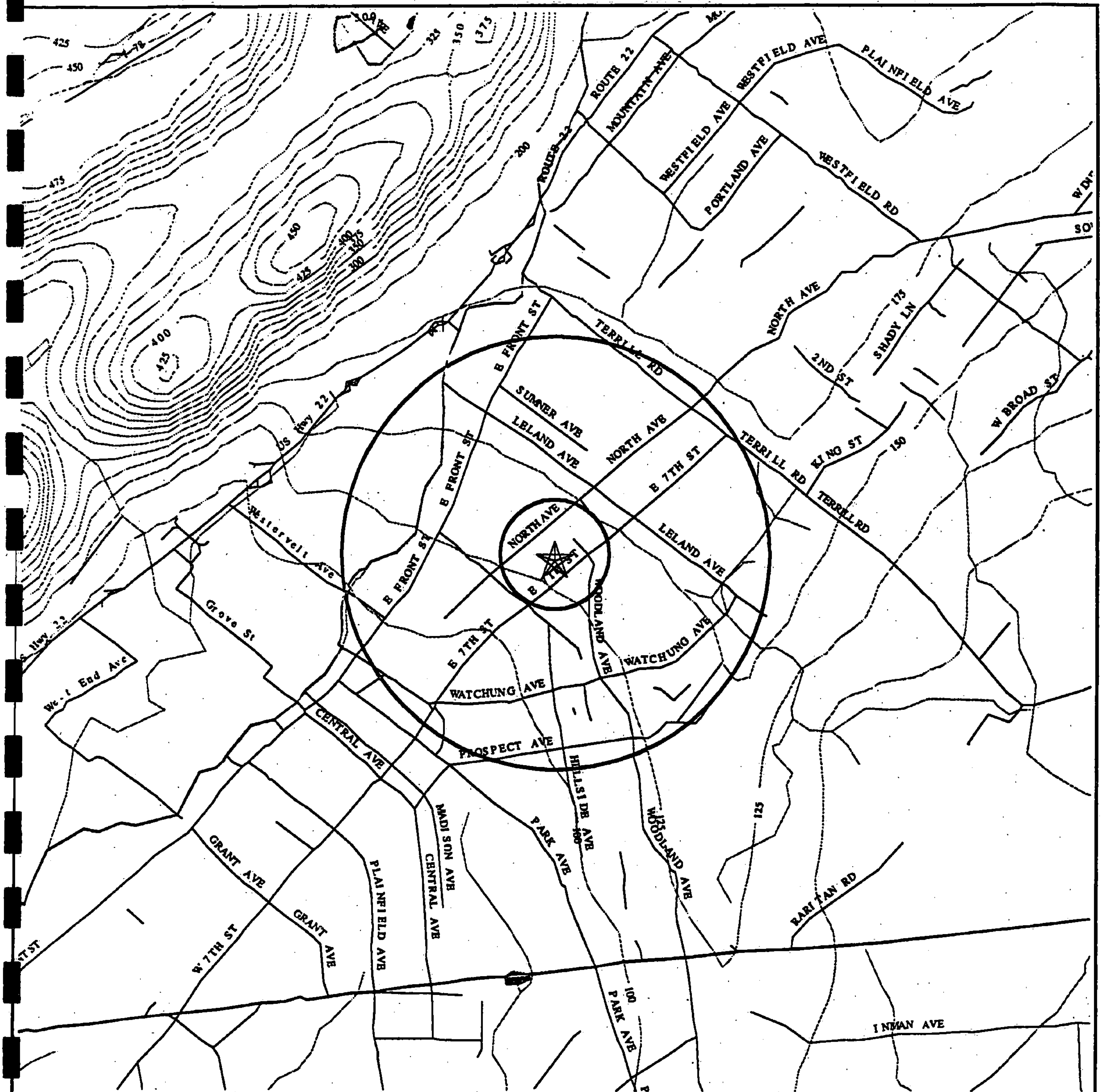
Historical Database(s)

Former Manufactured Gas (Coal Gas) Sites : The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc.

Disclaimer Provided by Real Property Scan, Inc.

The information contained in this report has predominanantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

TOPOGRAPHIC MAP



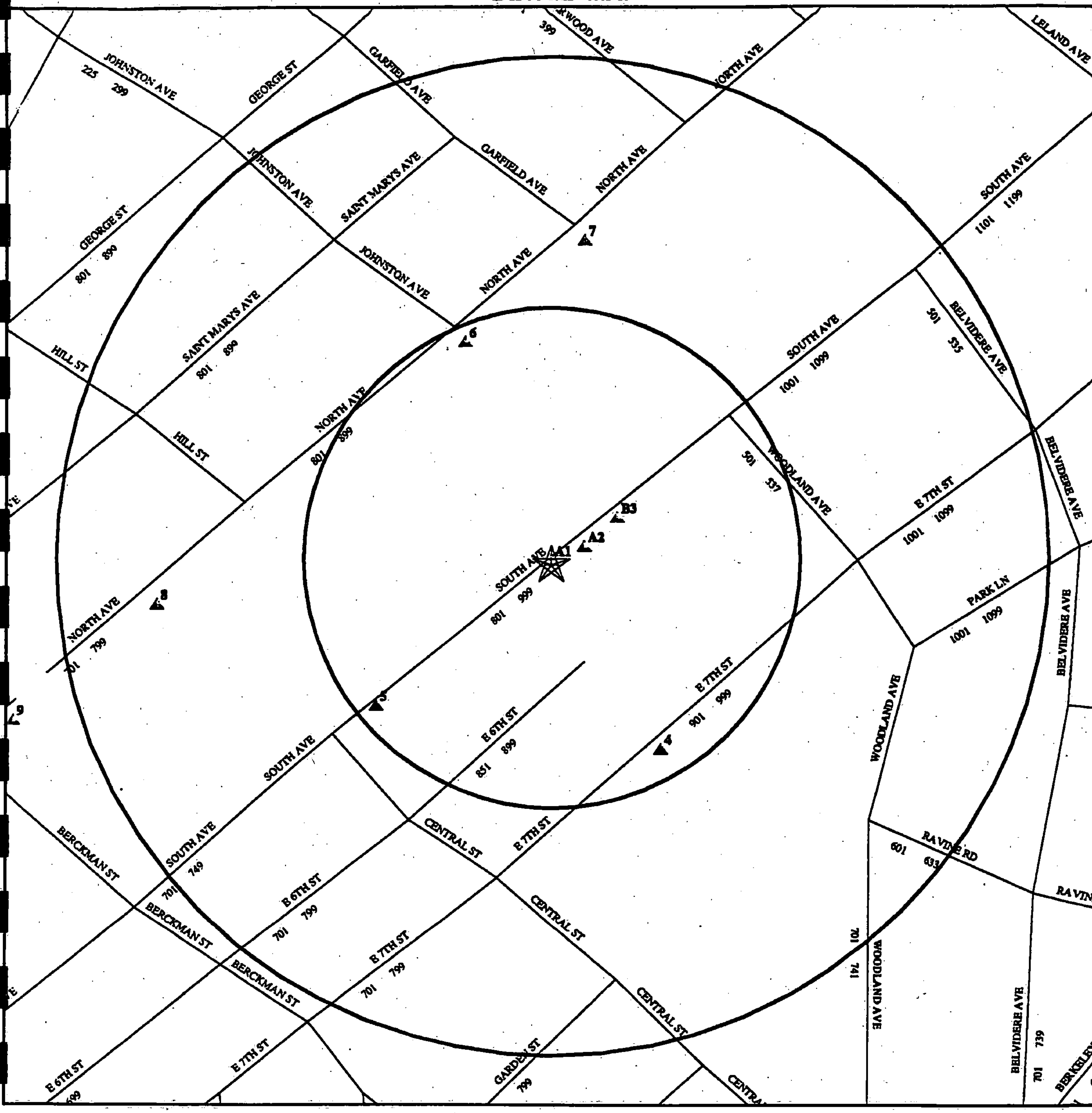
Source: US Geological Survey 1-Degree Digital Elevation Model
Compiled 09/15/92

0 1/4 1/2 1 2
Miles

- Major Roads
- Contour lines (50 foot interval unless otherwise shown)
- Waterways

TARGET PROPERTY:	Leitow Property/x392	CUSTOMER:	ESA, Inc.
ADDRESS:	912 South Ave.	CONTACT:	Jodi Ruff
CITY/STATE/ZIP:	Plainfield NJ 07061	INQUIRY #:	34607.1
LAT/LONG:	40.6266 / 74.4061	DATE:	November 5, 1993

DETAIL MAP



★ - Indicates TARGET PROPERTY.

- Indicates environmental elements found in NEDIS at ASTM or customer specified distances.

- Coal Gasification Sites (if requested)

- National Priority List Sites

0 1/8 1/4
Miles

TARGET PROPERTY:	Leitow Property/x392	CUSTOMER:	ESA, Inc.
ADDRESS:	912 South Ave.	CONTACT:	Jodi Ruff
CITY/STATE/ZIP:	Plainfield NJ 07061	INQUIRY #:	34607.1
LAT/LONG:	40.6266 / 74.4061	DATE:	November 5, 1993

OVERVIEW MAP

- Indicates TARGET PROPERTY.
- Indicates environmental elements found in NEDIS at ASTM or customer specified distances.
- Coal Gasification Sites (if requested)
- National Priority List Sites

TARGET PROPERTY:	Leitow Property/x392	CUSTOMER:	ESA, Inc.
ADDRESS:	912 South Ave.	CONTACT:	Jodi Ruff
CITY/STATE/ZIP:	Plainfield NJ 07061	INQUIRY #:	34607.1
LAT/LONG:	40.6266 / 74.4061	DATE:	November 5, 1993

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted	Total Orphans
NPL		1.000	0	0	0	0	NR	0	0
RCRIS-TSDF		1.000	0	0	0	0	NR	0	0
State Haz. Waste		1.000	0	0	0	2	NR	2	0
CERCLIS		0.500	0	0	0	NR	NR	0	0
State Landfill		0.500	0	0	0	NR	NR	0	2
LUST		0.500	0	2	3	NR	NR	5	5
UST		0.125	2	NR	NR	NR	NR	2	3
RAATS		TP	NR	NR	NR	NR	NR	0	0
RCRA Sm. Quan. Gen.		0.125	3	NR	NR	NR	NR	3	0
RCRA Lg. Quan. Gen.		0.125	2	NR	NR	NR	NR	2	2
HMIRS		TP	NR	NR	NR	NR	NR	0	0
PADS		TP	NR	NR	NR	NR	NR	0	0
ERNS		TP	NR	NR	NR	NR	NR	0	0
FINDS	X	TP	NR	NR	NR	NR	NR	0	3
TRIS		TP	NR	NR	NR	NR	NR	0	0
TSCA		TP	NR	NR	NR	NR	NR	0	0
Coal Gas		NR	NR	NR	NR	NR	NR	NR	NR

TP = Target Property

NR = Not Requested at this Search Distance

* Sites may be listed in more than one database

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
A1 Target Property	EXECUTIVE CABINET CO 912 SOUTH AVE PLAINFIELD, NJ 07062 Other Pertinent Environmental Activity Identified at Site: facility has an emission permit under the Clean Air Act	FINDS	1000538641 NJD000575639
A2 < 1/8	CLEMS ORNA. IRON WKS INC. 929 SOUTH AVENUE PLAINFIELD, NJ 07062	RCRIS-SQG FINDS	1000303211 NJD011661352
B3 ENE < 1/8	COURY'S AUTO BODY SHOP 949 SOUTH AVE PLAINFIELD, NJ 7062	FINDS RCRIS-LQG	1000372673 NJD011661600
4 SSE < 1/8	MAXSON MIDDLE SCHOOL 920 E 7TH ST PLAINFIELD, NJ 07060	RCRIS-SQG FINDS UST	1000542684 NJD986611614
5 SW < 1/8	CARFARO COLLISION CTR 803D SOUTH AVE PLAINFIELD, NJ 7062	RCRIS-SQG FINDS	1000227881 NJD106243314
6 NNW < 1/8	HOWELL ELECTRIC MOTORS 900 NORTH AVE PLAINFIELD, NJ 7061 Other Pertinent Environmental Activity Identified at Site: facility has an emission permit under the Clean Air Act	FINDS RCRIS-LQG UST	1000204611 NJD981140106
7 North 1/8-1/4	C PETRO LEASING CORP 1000 NORTH AVE PLAINFIELD, NJ 7060 LUST: N/A	FINDS LUST RCRIS-LQG UST	1000223899 NJD986581247
8 West 1/8-1/4	FURINO & SON INC 767 NORTH AVE PLAINFIELD, NJ 07062 LUST: N/A	LUST UST	U000359135 N/A
9 WSW 1/4-1/2	QUEEN CITY FUEL OIL CO 717 NORTH AVE PLAINFIELD, NJ 07062 LUST: N/A	LUST UST	U000354543 N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
10 NE 1/4-1/2	G O KELLER INC 1201-11 SOUTH AVE PLAINFIELD, NJ 7062	RCRIS-SQG FINDS LUST UST	1000121362 NJD986567022

LUST: N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
11 SW 1/4-1/2	ECKNER'S GARAGE INC. 620 SOUTH AVE PLAINFIELD, NJ 07062	LUST UST	U000371037 N/A

LUST: N/A

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
12 SW 1/2-1	EAST 4TH STREET SITE 314 EAST 4TH ST PLAINFIELD, NJ 07060	CERCLIS SHWS FINDS	1000390833 NJD980771323

CERCLIS Site Status: EPA has conducted a preliminary assessment on this site and has determined that no further action is necessary and no hazard was identified

CERCLIS Last Assessment: PRELIMINARY ASSESSMENT Completed - 07/30/87

(For more information on this site, call your EDR Customer Service Rep.)

Map ID Direction Distance	Site	Database(s)	EDR ID Number EPA ID Number
13 SW 1/2-1	PLAINFIELD GAS WORKS WATCHUNG AVE & E. 4TH STREET PLAINFIELD, NJ 07060	CERCLIS SHWS FINDS	1000256702 NJD981082936

CERCLIS Site Status: This site is currently under investigation by the government to assess the extent of further action

CERCLIS Last Assessment: SCREENING SITE INSPECTION Completed - 09/25/90

(For more information on this site, call your EDR Customer Service Rep.)

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PLAINFIELD	1000328642	SUNOCO SERVICE STATION	SOUTH & BELVIDERE AVES	07062	IQU ✓
PLAINFIELD	1000456908	SHELL OIL CO	SOUTH & LELAND AVES	07062	IQU ✓
PLAINFIELD	S100111971	WEST END GARDENS APTS COMPLEX	W 4TH ST		K ✓
PLAINFIELD	S100113533	CITY OF PLAINFIELD PUBLIC WORKS GAF	745 S AVE		K ✓
PLAINFIELD	S100111963	FORMER MOBIL S/S #15-AFP	1314 S AVE		K ✓
PLAINFIELD	S100111968	MOBIL STATION	1314 S AVE		K ✓
PLAINFIELD	S100112730	PLAINFIELD CITY	745 SOUTH AVE PO BOX 431		L
PLAINFIELD	S100112488	SOUTH PLAINFIELD BORO COMPOST	END OF KENNETH AVE		L
WATCHUNG	1000540373	BAYBERRY E.S.	BAYSERRY LANE	07060	IKU

Database Codes:

B = PADS	G = RCRA-SQG	L = State Landfill	T = RCRIS-TSDF
C = CERCLIS	H = State Haz. Waste	N = NPL	U = UST
D = HMIRS	I = FINDS	Q = RCRA-LQG	V = RAATS
E = ERNS	K = LUST	S = TRIS	X = TSCA

Attachment 5

NJDEP Non-Applicability Letter

02. 02. 93

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 028
Trenton, NJ 08625-0028

Scott A. Weiner
Commissioner

Karl J. Delaney
Director

MR ALFRED LEITOW
PO BOX 4526
WAAREN NJ 07059

SEE ATTACHMENT FOR COMPANY NAMES
912 S AVE STORE #1
Lot 3, Block 621
PLAI[illegible]IELD BOROUGH, UNION COUNTY
N30148

FEB [illegible] 1993

Dear MR LEITOW;

This is in response to your application received 01/15/1993, concerning the applicability of the Environmental Cleanup Responsibility Act (ECRA) to the sale of the above referenced premises. On the basis of the sworn statements set forth in your affidavit, the Department finds that this transaction is not subject to the provisions of ECRA.

This decision is made in light of the absence of an industrial establishment as defined within the Standard Industrial Classification numbers covered by the Act. [illegible] inaccuracies in the affidavit or subsequent changes in the facts as stated [illegible] alter the Department's determination.

The inapplicability of the Environmental Cleanup Responsibility Act (ECRA) to this transaction does not relieve the above referenced of any responsibilities under any other environmental statutes, regulations or permits.

In addition, this determination of ECRA nonapplicability does not constitute any finding by the New Jersey Department of Environmental Protection as to the current site condition or existance or nonexistence of any hazards to the environment at this location.

Should you have any further questions regarding this matter, please contact me at (609) 633-7141.

Sincerely,

James J. Bono

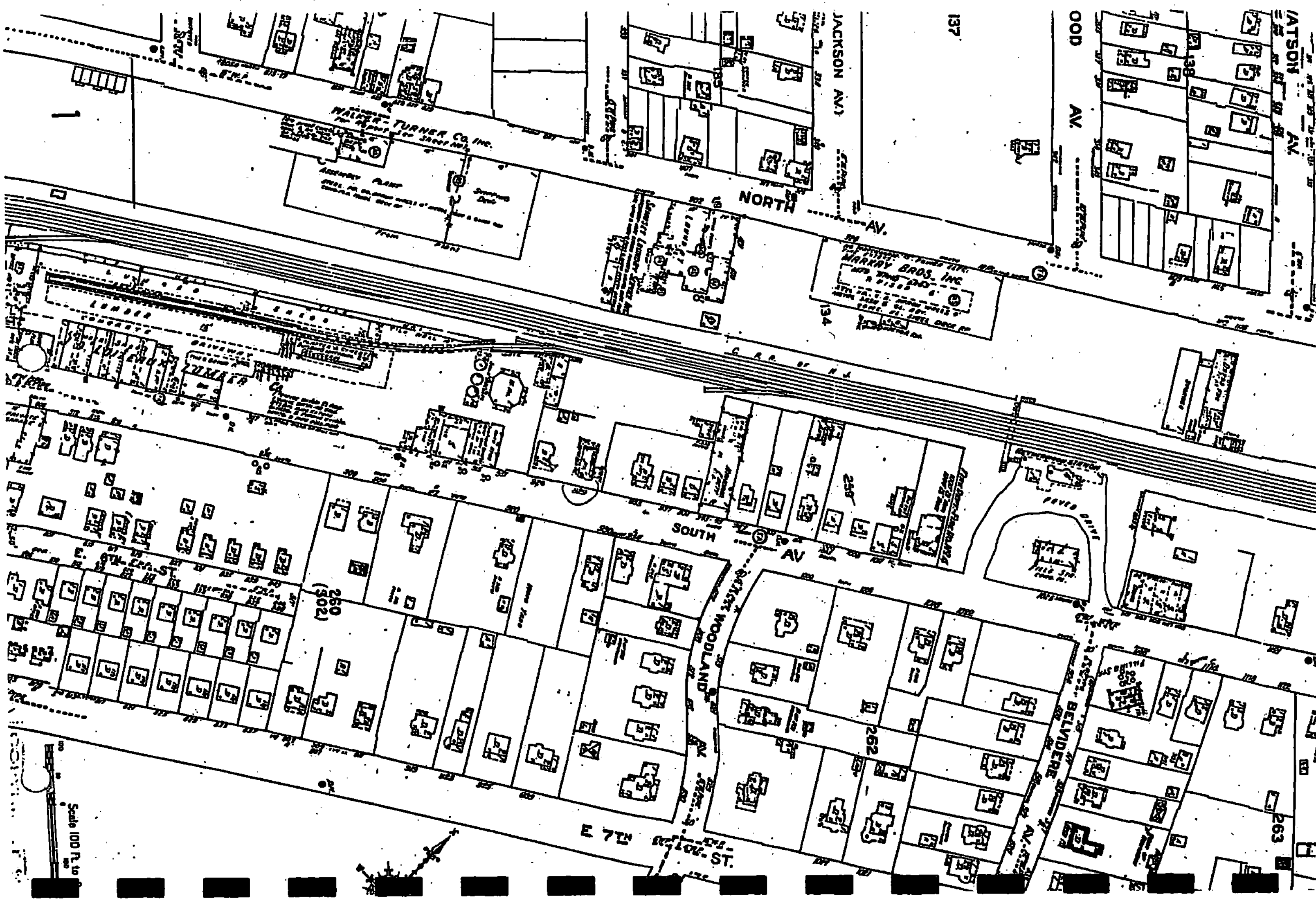
James J. Bono, Supervisor
Bureau of Applicability and Compliance

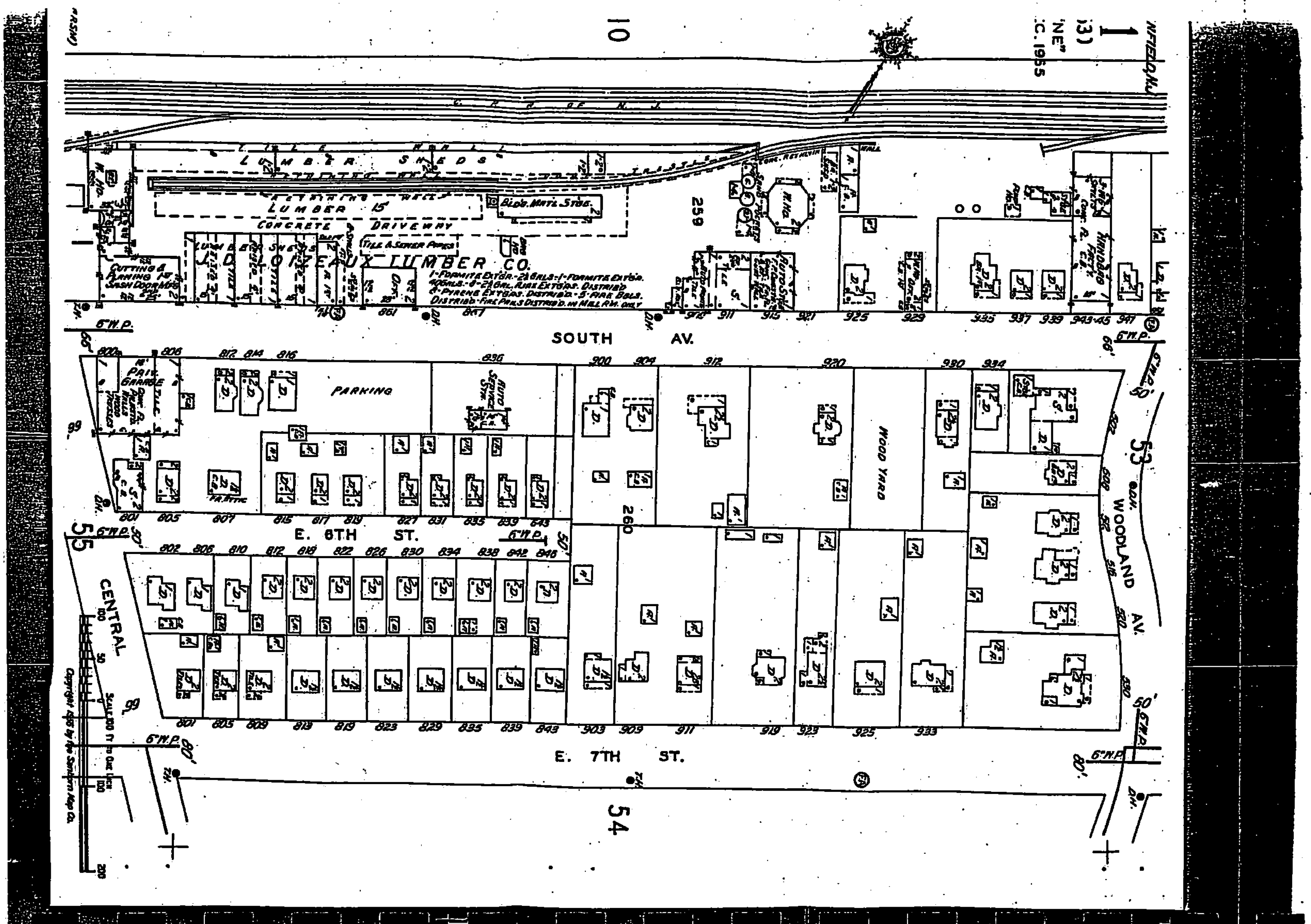
ATTACHMENT

Quick Food Mart,
904-912 Properties,
Pigtails Store #3
Ms. K's Sons & Daughters Inc.
Accurate Ref. & Appliance Service Inc.
World Commerical Corp.

Attachment 6

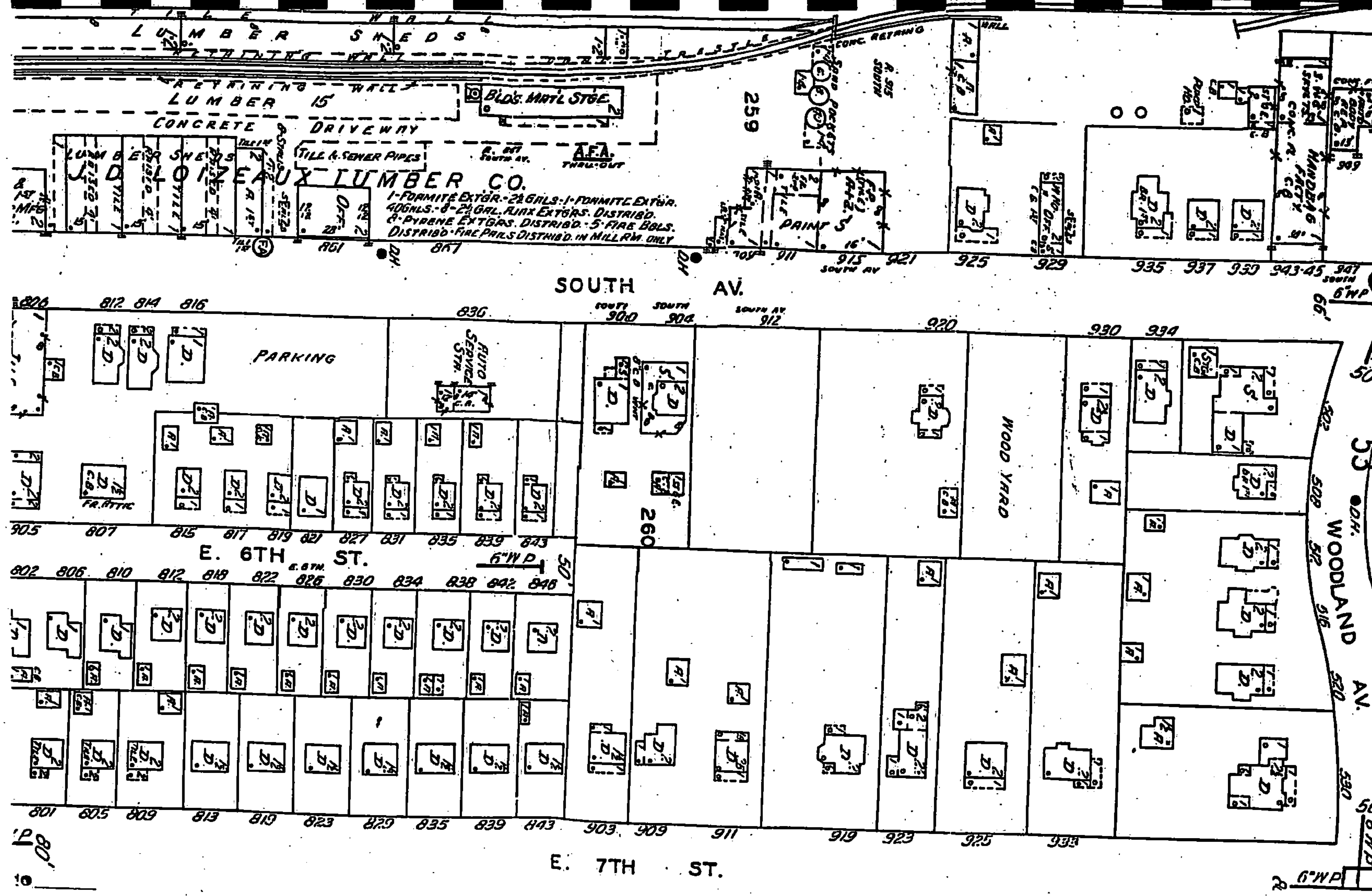
Sanborn Maps

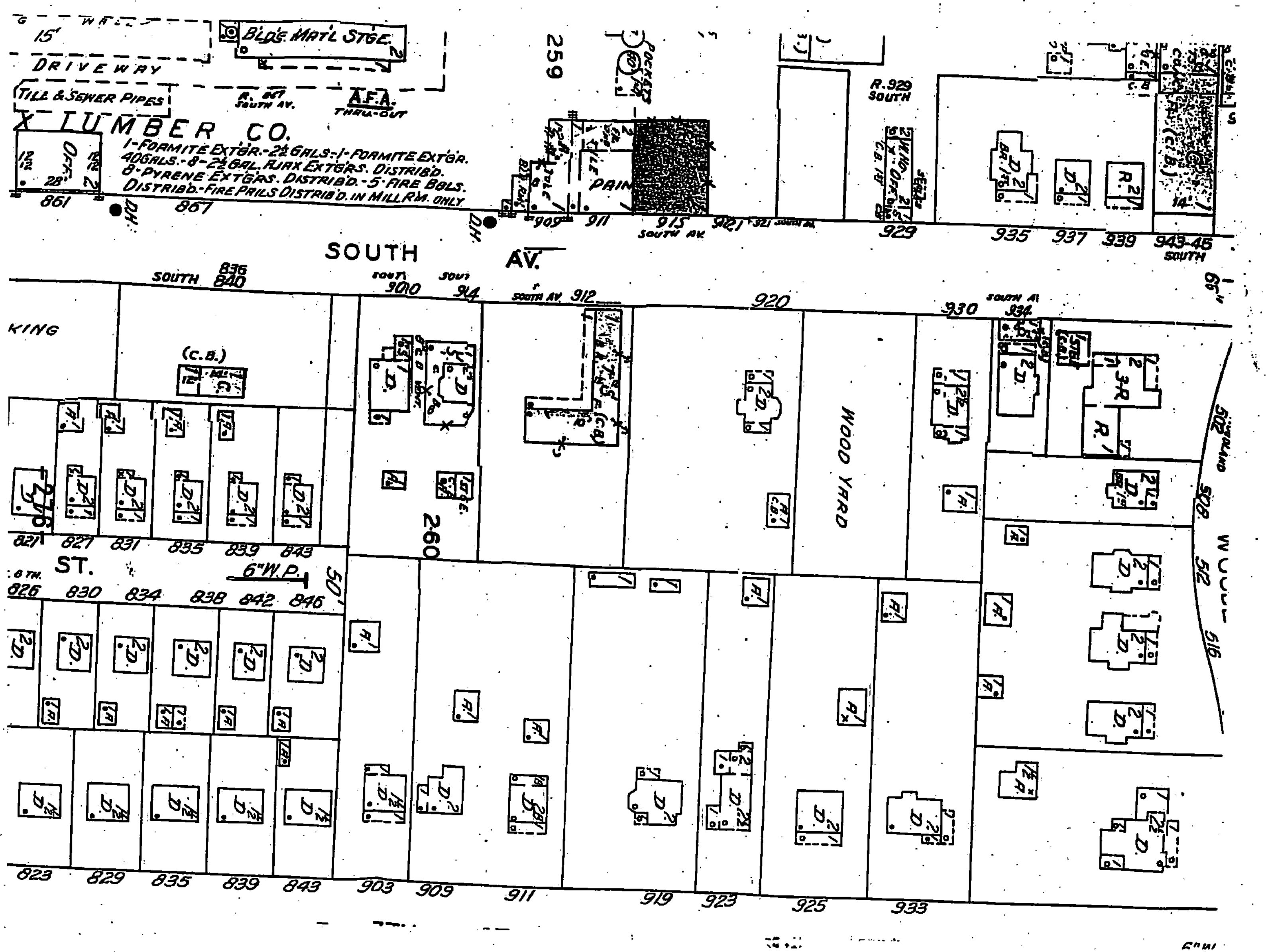

NORTH AV.
SOUTH AV
E 7TH ST.
WOODLAND AV.
BELVIDERE AV.
JACKSON AV.
WATSON AV.
WALKER TURNER Co. Inc.
MARKAY BROS. INC.
LUMBER
137
138
134
262
263
259
260
(302)



10
LUMBER SHEDS
LUMBER
CONCRETE DRIVEWAY
BLDG. MATL. STRG.
TILE & SEWER PIPES
LUMBER CO.
259
SOUTH AV.
PARKING
WOOD YARD
260
E. 6TH ST.
E. 7TH ST.
CENTRAL
WOODLAND AV.
53
54
55

-274-


LUMBER SHEDS
RETAINING WALL
LUMBER 15
CONCRETE DRIVEWAY
BLD'G MAT'L STGE.
TILE & SEWER PIPES
A.F.A. THRU-OUT
J. D. LOIZEAUX LUMBER CO.
1-FOAMITE EXTGR.-2½ GALS.-1-FOAMITE EXTGR. 40 GALS.-8-2½ GAL. PYRAX EXTGRS. DISTRIB'D. 6-PYRENE EXTGRS. DISTRIB'D.-5-FIRE BBLS. DISTRIB'D.-FIRE PAILS DISTRIB'D. IN MILL RM. ONLY
OFF.
PAINTS
259
260
SOUTH AV.
PARKING
AUTO SERVICE STA.
WOOD YARD
E. 6TH ST.
E. 7TH ST.
WOODLAND AV.
6" W.P.
D.H.
801 805 809 813 819 823 829 835 839 843 903 909 911 919 923 925 933
802 806 810 812 818 822 826 830 834 838 842 846
805 807 815 817 819 821 827 831 835 839 843
806 812 814 816 830 900 904 912 920 930 934
861 867 909 911 915 921 925 929 935 937 939 943-45 947
502 508 512 516 520 530



DRIVEWAY
BLDG MAT'L STGE.
TILE & SEWER PIPES
A.F.A. THRU-OUT
LUMBER CO.
1-FORMITE EXTGR.-2½ GALS.-1-FORMITE EXTGR. 40 GALS.-8-2½ GAL. AJAX EXTGRS. DISTRIBD. 8-PYRENE EXTGRS. DISTRIBD.-5-FIRE BBLS. DISTRIBD.-FIRE PAILS DISTRIB'D. IN MILL RM. ONLY.
259
R. 929 SOUTH
SOUTH AV.
WOOD YARD
260
ST.
6"W.P.

1982

Attachment 7

GO Keller Report Information

GROUNDWATER INVESTIGATION

December 1992

G. O. KELLER

PLAINFIELD, NEW JERSEY

UNDERGROUND TANK PROGRAM

ENGINEERING AND TECHNOLOGY SERVICES

SHAKTI CONSULTANTS, INC.
JAMESBURG, NEW JERSEY

John Bee
Senior Geologist, Shakti Consultants, Inc.
CPG#6173 American Institute of
Professional Geologists

About the Firm

Shakti Consultants, Inc. is an independently owned, private consulting firm with offices in Jamesburg, New Jersey. We have provided John Bee, a Senior Hydrogeologist with 16 years experience to conduct this assessment. Mr Bee has accreditation as a Certified Professional Geologist # 6173, American Institute of Professional Geologist, and certification (#G0000413) for subsurface investigation and tank closure accepted by the Bureau of Underground Tanks, NJDEPE.

Kell1292.doc

4.0. FINDINGS

Geohydrology of the Area

A description of soils and fill material which is found at the site is provided. This information is critical to the evaluation of potential migration or attenuation of contaminants.

This area was glaciated in the recent geological time, in the Pleistocene period, so that bedrock surface is covered with a mantle of glacial drift of alternating silty clay and sand zones more than 65 feet deep. Glacial clay till was encountered during the excavations. The dry well was encapsulated in this dense, clay till. In the soil borings this red-brown clay/silt till extended more than 20 feet below ground. A gravelly sand/pea gravel horizon was encountered in all three soil borings below 20 feet. This sand/gravel zone that was 4 to 5 feet thick in MW-101 and MW-103 thickened to the north to a 10-feet thick horizon in MW-102. This upper permeable zone was dry and rests upon a clayey silt and clay horizon approximately twenty feet thick. Below this impermeable zone a fine wet sand was encountered at approximately 55 feet first groundwater. This zone contained the monitor wells were screened in this first water bearing zone.

The site is underlain by Brunswick Shale of the Newark group of rocks of Triassic age that is below 65 feet depth.

Groundwater Sample Results

MW-101 and Solvent Tank:

Groundwater was collected and analyzed for the following parameters: PHC, volatile organics + 15, MTBE/TBA, pH. The contaminants detected are listed at follows:

Compound	Significance	Proposed NJDEPE Groundwater Cleanup Level
Tetrachloroethylene	1.8 ug/l	1 ug/l
1,1,1-Trichloroethane	8.6 ug/l	30 ug/l
Chloroform	1.2 ug/l	6 ug/l
PHCs	0.57 mg/l	? None available
MTBE	7.8 ug/l	?
Bis(2-Ethyhexyl) Phthalate	3.1 ug/l	Common lab/sampling anomaly

MW-102: Heating Oil Tank: Groundwater was collected and analyzed for the following parameters: Base Neutrals +15, PHC, pH.

PHCs	0.53 mg/l	?
B/N	Non Detected	

Laboratory Sample Results Summary Table - G.O. KELLER
Water

Area Date	Sample Number	Matrix	Location Depth (feet)	Parameter	Concentration	Significance
10/29/92	E228212	GW	MW101	Volatile Organics		
				Chloroform	1.2 ug/l (J)	
				Tetrachloroethylene	1.8 ug/l (J)	
				1,1,1-Trichloroethane	8.6 ug/l	
				MTBE	7.8 ug/l	
				TBA	ND	
				Base Neutral Extractables		
				Bis(2-Ethylhexyl)Phthalate	3.1 ug/l (J)	
				VOA-TIC	ND	
				B/N-TIC	18 ug/l	
				Petroleum Hydrocarbons	0.57 mg/l	
				pH	7.4 su	
10/29/92	E228213	GW	MW102	Base Neutral Extractables	ND	
				B/N-TIC	12 ug/l	
				Petroleum Hydrocarbons	0.53 mg/l	
				pH	6.8 su	
10/29/92	E228214	GW	MW103	Volatile Organics		
				Tetrachloroethylene	4.3 ug/l (J)	
				1,1,1-Trichloroethane	11 ug/l	
				Trichloroethylene	1.9 ug/l (J)	
				MTBE	7.5 ug/l	
				TBA	ND	
				VOA-TIC	14 ug/l	
				pH	6.8 su	
10/29/92	E228215	Water	Field Blank	Volatile Organics	ND	
				Base Neutral Extractables	ND	
				VOA-TIC	ND	
				B/N-TIC	20 ug/l	
				Petroleum Hydrocarbons	<0.50 mg/l	
				pH	6.7 su	
10/29/92	E228216	Water	Trip Blank	Volatile Organics	ND	
				Base Neutral Extractables	ND	

MW-103: Gasoline Tank: Groundwater was collected and analyzed for the following parameters: Volatile organics + 15, MTBE/TBA, pH.

Compound	Significance	Proposed NJDEPE Groundwater Cleanup Level
Trichloroethylene	1.9 ug/l	1 ug/l
Tetrachloroethylene	4.3 ug/l	1 ug/l
1,1,1-Trichloroethane	11 ug/l	30 ug/l
MTBE	7.5 ug/l	?

5.0. Future Plans and Recommendations

A second round of groundwater samples will be required.

The relatively impermeable clay horizon appears to have contained and adsorbed much of the contaminants spilled.

The impact to groundwater is above the proposed action levels for Trichloroethylene and Tetrachloroethylene. If these levels are confirmed in the second round of groundwater samples, in compliance with the policy guidance from the Bureau of Aquifer Protection we propose to sample the wells on a biannual basis and allow natural attenuation of the contaminants by adsorbtion onto the soil grains to reduce the groundwater contaminant concentrations.

SHAKTI CONSULTANTS INC.
185 Gatzmer Avenue
Jamesburg, NJ 08831
(908) 521-2322

May 4, 1993

Timothy Nuss
Bureau of Site Remediation
NJ Department of Environmental Protection
P.O. Box CN 028
Trenton NJ 08625-0028

Re: Use of Stoddard Solvent
G.O. Keller
1201 South Avenue, Plainfield, NJ
Case No. 90-03-21-1155

Dear Mr. Nuss,

The NJDEPE has requested information regarding the use of solvents at the G.O. Keller facility.

There are basically two types of solvents used to dry clean clothes, chlorinated solvents and petroleum based solvents.

G.O. Keller uses the petroleum based solvent or Stoddard Solvent which contains only mineral spirits. This fact has been established because the type of equipment they use for dry cleaning can only use the Stoddard type solvent. Enclosed are copies of the Material Safety Data Sheets ("MSDS's") for the Stoddard solvent used by G.O. Keller.

As such, the trace chlorinated solvents in the groundwater are to be considered as background levels of a trace regional ground water problem and in my opinion, I have found nothing on this site that would have contributed to the trace chlorinated solvents in the ground water.

If you have any questions, please contact me.

Yours sincerely,

JBee

JOHN BEE, President
Shakti Consultants, Inc.

Senior Geologist
CPG#6173 American Institute of Professional Geologists

cc: Andrew Perel Esq., Rosenman & Colin
Vince Soutelle, G.O. Keller

Attachment 8

Netherwood Auto Repair Center Report Information

AGUILAR
ASSOCIATES & CONSULTANTS INC.
YOUR ENVIRONMENTAL SERVICE CORPORATION

ORIGINAL

SITE ASSESSMENT IMPLEMENTATION SUMMARY
and
DISCHARGE INVESTIGATION AND CORRECTIVE ACTION REPORT (DICAR)

prepared for

NETHERWOOD AUTO REPAIR CENTER
1000 South Avenue
Plainfield, New Jersey

NJDEPE CASE NO. 91-11-21-1602-19
TMS # C-91-3715
C-91-3774

prepared by

AGUILAR ASSOCIATES & CONSULTANTS, INC.
30 Freneau Avenue
Matawan, New Jersey 07747

AA&C Project No. 91-158

01 April 1992

Prepared by:

Daniel Spinogatti, Jr.
Environmental Scientist

Reviewed by:

Steven K. Jones, P.G.
Hydrogeologist
Central Region Manager

The ground water elevations and monitoring data is available in Table IV (Ground Water Monitoring Summary). A Cross Section Map showing the surface drainage system, monitoring well locations, and local ground water flow is available in Figure 4.

5.2 Ground Water Monitoring/Sampling

All monitoring wells were gauged for water elevation and separate phase petroleum thickness using a sonic interface probe. The sonic interface probe is capable of differentiating between immiscible product and water. No measurable separate phase petroleum product was detected in the three monitoring wells. Ground water from each well was also inspected for a visible petroleum sheen or odor. No odors or sheens were detected on the ground water.

AA&C personnel collected representative ground water samples from the three monitoring wells on 31 December 1991 (MW-1 and MW-2) and 29 January 1992 (MW-3). Each well was purged of 3 well volumes with a decontaminated PVC bailer after gauging the wells for separate phase petroleum and water level depth. Ground water recharge was very slow (less than one gallon per minute).

A second round of ground water samples was collected on 28 February 1992. Samples were only obtained from MW-1 and MW-3. No water was present in MW-2 at the time of ground water sampling. The large fluctuation in the ground water elevation in MW-2 is most likely due to the previously mentioned drainage system. A lack of water recharging from the drainage system caused the ground water levels in MW-2 to drop significantly.

Samples were collected using dedicated stainless steel bottom check bailers. The bailers were lowered into the wells using dedicated polypropylene line. Samples were collected from the upper two foot column of groundwater in each well. All samples were analyzed by a New Jersey certified laboratory for volatile organic compounds plus 15 (EPA Mehtod 624) calibrated for xylenes, MTBE, and TBA. MTBE (Methyl-tertiary-butyl-ether) and TBA (tertiary-butyl-alcohol) are gasoline octane enhancement compounds. The Ground Water Monitoring Summary is shown in Table IV.

TABLE IV
GROUND WATER MONITORING SUMMARY
Netherwood Auto Repair Center

	MW-1	MW-2	MW-3
Well Construction			
Casing Elevation	117.83	117.69	118.78
Depth to Screen	9.00	9.00	38.00
Total Depth of Well	29.00	29.00	53.00
Measurements (01/29/92)			
Depth to Water	24.90	27.04	49.68
Product Thickness	0.00	0.00	0.00
Ground Water Elev.	92.93	90.65	69.10
Measurements (02/28/92)			
Depth to Water	26.42	---	49.64
Product Thickness	0.00	0.00	0.00
Ground Water Elev.	91.41	---	69.14

NOTE: All measurements in feet
All wells flushmount
Measurements from top of PVC casing
Assumed elevation = 120.00 feet
Ground water not encountered in MW-2 on 02/28/92

5.3 Ground Water Sampling Results ROUND 1

The first round of ground water sampling was conducted on 31 December 1991 for MW-1 and MW-2, and on 29 January 1992 for MW-3. Laboratory analysis indicates the presence of petroleum related compounds in the ground water from the three monitoring wells. Targeted volatile organics (VOs) were detected at concentrations of 446 parts per billion (ppb) in MW-1, 57 ppb in MW-2, and 49 ppb in MW-3. The majority of targeted VOs detected are BTEX compounds (benzene, toluene, ethylbenzene, xylenes) and MTBE. BTEX compounds are gasoline contaminants. BTEX was detected at 446 ppb in MW-1, 57 ppb in MW-2, and not detected in MW-3. The chlorinated solvent tetrachloroethene (PCE) was detected in MW-3 at 49 ppb. This compound is commonly found in metal-degreasing fluids and dry-cleaning chemicals. Concentrations of tetrachloroethene were not detected in MW-1 or MW-2.

MTBE was present at concentrations of 210 ppb in MW-1, 490 ppb in MW-2, and 9 ppb in MW-3. TBA was detected at 71 ppb in MW-1 and 78 ppb in MW-2. TBA was not detected in MW-3. Non-targeted volatile organic compounds were detected at concentrations of 168 ppb in MW-1, 153 ppb in MW-2, and 1350 ppb in MW-3.

Isopleth maps (concentration contour maps) of Round 1 laboratory analysis are presented in Figures 5 and 6. The Analytical Data Package for the first round of ground water analysis is available in Appendix IV. A summary of the analytical data is available in Table V.

5.4 Ground Water Sampling Results ROUND 2

The second round of ground water samples for MW-1 and MW-3 were collected on 28 February 1992. Laboratory analysis indicates the presence of petroleum related compounds in the ground water. Lower levels of compounds were detected in MW-1. Levels in MW-3 stayed relatively consistant with those from round 1.

Targeted VOs were reported at concentrations of 48 ppb in MW-3. This consisted of tetracholorethene. Targeted VOs were not detected in MW-1. BTEX compounds were not detected in either well. In MW-1, 170 ppb of MTBE and 99 ppb of TBA were detected. In MW-3, MTBE was detected at 7 ppb. Non-targeted volatile organics were reported at 96 ppb in MW-1 and 538 ppb in MW-3.

TABLE V
GROUND WATER ANALYTICAL SUMMARY
Netherwood Auto Repair Center

Parameters	MW-1 (R1)	MW-1 (R2)	MW-2 (R1)	MW-2 (R2)	MW-3 (R1)	MW-3 (R2)
Targeted VOs	446	ND	57	-	49	48
BTEX fraction	446*	ND	57	-	ND	ND
PCE	ND	ND	ND	-	49	48
MTBE	210	170	490*	-	9	7
TBA	71	99	78	-	ND	ND
Non-targeted VOs	168	96	153	-	1,350	538

NOTE: Results rounded to nearest part per billion (ppb)
ND = Not detected above practical quantitation limit
VOs = Volatile organic compounds
BTEX= Benzene, toluene, ethylbenzene, xylenes
MTBE= Methyl-tertiary-butyl-ether
TBA = Tertiary-butyl-alcohol
PCE = tetrachloroethene
* = Result obtained from rerun due to saturation in original run
R1 = First sampling round (12/31/91 - MW-1, MW-2) (01/29/92 - MW-3)
R2 = Second sampling round (02/28/92)
Samples not obtained for MW-2 in second round of sampling

ECC

ironmental Compliance & Control Inc.

Addendum to the

Remedial Action Progress Report

for

Netherwood Auto Repair Center

1000 South Avenue

Plainfield, NJ

NJDEPE Case # 91-11-21-1602-19

January 1994

Prepared for:
Netherwood Auto Repair Center

4 SECOND AVENUE P.O. BOX 1060 DENVILLE, NEW JERSEY 07834 ■ 201 627-1995 ■ FAX: 201 627-68

B. Summary Discussion of Analytical Results

Analytical results obtained from samples collected from MW1, 2, and 3 between 12/91 and 7/93 reveal the following:

A) Values for concentrations of BTEX and TBA detected in MWs 1 and 2 during the first sampling event in 12/91 are absent in samples collected on 7/12/93. These compounds are gasoline fractions commonly associated with gasoline discharges and were not detected in the deeper aquifer monitored by MW3 at any point during this remedial action.

B) Low concentrations of MTBE below the State Action Level have persisted in all 3 MWs throughout the 4 sampling events. Contaminant concentrations have ranged from 7 parts per billion (ppb) to 490 ppb. The guideline State cleanup standards for MTBE in Class IIA Groundwaters pursuant to formerly proposed N.J.A.C. 7:26D-4.1 et. seq is 700 ppb.

C) Tetrachloroethene (PCE) has been detected only in MW3, in a groundwater sample originating from the deeper aquifer. During the last sampling event, the detected PCE concentration exceeded the guideline State cleanup standards for MTBE in Class IIA Groundwaters (1 ppb) by a factor of 22. Over a period of 19 months, attenuation of this compound has been greater than 50 % (48 ppb to 22 ppb). It is noted, however, that PCE is not a component of gasoline. It is commonly found in dry cleaning fluids and is used as a degreaser. PCE is also used in the manufacturing of inks and paint removers, and in the preparation of fluorocarbons. There is no historical record indicating the occurrence of these activities at the subject property.

IV. Conclusions & Recommendations

Investigations of groundwater quality were conducted at the Netherwood Auto Repair Center following a gasoline discharge from an underground storage tank field. Three monitoring wells, installed in 1991 to facilitate groundwater collection, led to the identification of two separate aquifers. Two sample rounds were performed by Aguilar in 1991-1992, and two additional sampling rounds were conducted by ECC in 1993.

During the first and second sampling rounds of the shallow aquifer in 1992, concentrations of Benzene and Xylene exceeded the guideline State cleanup standards for Class IIA Groundwaters. In the deeper aquifer during the same sampling rounds, PCE was detected in concentrations which exceeded the applicable State cleanup standards.

The latest sampling round conducted on 7/12/93 revealed that all targeted contaminants in the shallow aquifer were either undetected or detected in concentrations well below the guideline State cleanup levels for Class IIA aquifers. In the deeper aquifer, concentrations of PCE at 22 ppb exceeded the State action levels but continued to demonstrate substantial attenuation compared to samples collected in 1992 which detected 48 ppb of PCE.

The collected data set shows that gasoline impacted groundwater in the shallow aquifer has naturally attenuated over the past 19 month period. The analytical results obtained from this aquifer during the last sample round on 7/12/93 either failed to detect targeted parameters or detected concentrations of targeted parameters at levels well below State action levels. Based on this data, it is concluded that there is currently no evidence of continuing groundwater impact resulting from gasoline contamination originating at this site.

In the deeper aquifer, PCE had substantially attenuated from 48 ppb in 1992 to 22 ppb on 7/12/93, but remained in excess of the State action level of 1 ppb. For the purposes of obtaining final closure of this case, however, it is posited that PCE contamination in the deeper aquifer is part of a larger regional condition prevalent throughout this area and is unrelated to any former operations or conditions at the subject site. It is further noted that PCE was not detected in the upper aquifer where gasoline impacts

(Benzene, Xylenes) had obviously originated from the subject site. In addition, PCE is not a component of gasoline.

Interviews with Mr. Richard Sadowski of the Elizabethtown Water Company located in Plainfield, NJ, revealed that PCE is a contaminant of major concern that has been found in all of the company's potable water supply wells in the Plainfield area since 1988. PCE concentrations in groundwater obtained from the Company's shallowest well (completed at 350 feet) were 88 ppb in 6/93 and 25 ppb in 7/93. This attenuation reflects the decrease observed at the subject site.

Based on the known point-source of contamination at this site (USTs), the absence of PCE in the shallow aquifer, and the regional presence of PCE at similar concentrations, it is posited that PCE groundwater contamination in the deeper aquifer is a regional problem unrelated to the subject site.

On the basis of the remedial actions and analytical results documented in the 5/5/93 submission to the Department regarding the soil portion of this case, and the attached analytical results for the groundwater portion of this case, it is concluded that this site does not present unacceptable risks to human health or to the environment and that conditions in this area are in compliance with all guideline cleanup standards formerly proposed at N.J.A.C. 7:26D et seq. as subsequently amended and currently implemented. It is noted, however, that impacted soils are currently stockpiled at this site and await final disposition. Pending such final disposition, and submission of all required disposal documentation, a request for Department approval of a *no further action* determination is respectfully requested for this case at this time.

ANALYTICAL DATA REPORT PACKAGE

ENVIRONMENTAL COMPLIANCE & CONTROL

P 1000S

REPORT GENERATION DATE: June 17, 1993
DATE SAMPLED: June 3, 1993

USTRIAL CORROSIO AGEMENT, INC.
LABORATORIES
2 ROUTE 10
DOLPH, NJ 07869
NE: (201) 584-0330
: (201) 584-0515

ENT: ENVIRONMENTAL COMPLIANCE & CONTROL

ANALYTICAL DATA SUMMARY REPORT

lient Sample Number	Trip Blank	Field Blank	MW 1	MW 2	MW 3
CM Sample Number	167869	167870	167871	167872	167873
ampling Date	06/03/93	06/03/93	06/03/93	06/03/93	06/03/93
nits	UG/L	UG/L	UG/L	UG/L	UG/L
OLATILE PARAMETERS					
Chloromethane	5 U	5 U	5 U	5 U	5 U
Bromomethane	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	5 U	5 U	5 U	5 U	5 U
Chloroethane	5 U	5 U	5 U	5 U	5 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5 U
total-1,2-Dichloroethene	5 U	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U
2-Chloroethyl vinyl ether	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	5 U
Benzene	5 U	5 U	6	27	5 U
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5 U	5 U	5 U	5 U	26
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U
total Xylenes	5 U	5 U	4J	5 U	5 U
t-Butyl alcohol	50 U	50 U	50 U	50 U	50 U
t-Butyl methyl ether	5 U	5 U	83	180	10
Total Non-Target Compounds	0	0	15	110	0

ANALYTICAL DATA REPORT PACKAGE

ENVIRONMENTAL COMPLIANCE & CONTROL

P1000S

REPORT GENERATION DATE: August 9, 1993
DATE SAMPLED: 07/12/93

IDUSTRIAL CORROSI MANAGEMENT, INC.
CM LABORATORIES
152 ROUTE 10
ANDOLPH, NJ 07869
HONE: (201) 584-0330
AX: (201) 584-0515

AUGUST 9 93

CLIENT: ENVIRONMENTAL COMPLIANCE & CONTROL

ANALYTICAL DATA SUMMARY REPORT

Client Sample Number	MW 1	MW 2	MW 3	FB	TB
ICM Sample Number	170074	170075	170076	170077	170078
Sampling Date	07/12/93	07/12/93	07/12/93	07/12/93	07/12/93
Units	UG/L	UG/L	UG/L	UG/L	UG/L
VOLATILE PARAMETERS					
Chloromethane	5 U	5 U	5 U	5 U	5 U
Bromomethane	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	5 U	5 U	5 U	5 U	5 U
Chloroethane	5 U	5 U	5 U	5 U	5 U
Methylene chloride	11 B	13 B	6 B	21 B	13 B
Trichlorofluoromethane	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5 U
total-1,2-Dichloroethene	5 U	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U
2-Chloroethyl vinyl ether	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	5 U
Benzene	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5 U	5 U	22	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U
total Xylenes	5 U	5 U	5 U	5 U	5 U
t-Butyl methyl ether	83	450	7	4J	5 U
t-Butyl alcohol	50 U	50 U	50 U	50 U	50 U
Total Non-Target Compounds	0	0	0	0	0

V. Analytical Results

AnalytiKEM

Volatile Organics

Parameter	Method Blank 1	A26461-1 MW 1	A26461-2 MW 2
		Sample Designation	
Chloromethane	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U
Methylene Chloride	5.0 U	5.0 U	5.0 U
1,1-Dichloroethene	5.0 U	5.0 U	5.0 U
1,1-Dichloroethane	5.0 U	5.0 U	5.0 U
trans-1,2-Dichloroethene	5.0 U	5.0 U	5.0 U
Chloroform	5.0 U	5.0 U	5.0 U
1,2-Dichloroethane	5.0 U	5.0 U	5.0 U
1,1,1-Trichloroethane	5.0 U	5.0 U	5.0 U
Carbon Tetrachloride	5.0 U	5.0 U	5.0 U
Bromodichloromethane	5.0 U	5.0 U	5.0 U
1,2-Dichloropropane	5.0 U	5.0 U	5.0 U
trans-1,3-Dichloropropene	5.0 U	5.0 U	5.0 U
Trichloroethene	5.0 U	5.0 U	5.0 U
Dibromochloromethane	5.0 U	5.0 U	5.0 U
1,1,2-Trichloroethane	5.0 U	5.0 U	5.0 U
Benzene	5.0 U	290 *	3.6 J
cis-1,3-Dichloropropene	5.0 U	5.0 U	5.0 U
2-Chloroethyl Vinyl Ether	10 U	10 U	10 U
Bromoform	5.0 U	5.0 U	5.0 U
Tetrachloroethene	5.0 U	5.0 U	5.0 U
Toluene	5.0 U	12	53
Chlorobenzene	5.0 U	5.0 U	5.0 U
Ethylbenzene	5.0 U	100	5.0 U
m-Xylene	5.0 U	5.0 U	5.0 U
o,p-Xylene	5.0 U	44	5.0 U
2-Methyl-2-Propanol (TBA)	60 U	71	78
2-Methoxy-2-Methylpropane (MTBE)	5.0 U	210 *	490 *
Units	(ug/l)	(ug/l)	(ug/l)

* Result obtained from rerun due to saturation in original run.

V. Analytical Results (Cont'd) **AnalytiKEM**

Volatile Organics

Parameter	Sample Designation: Method Blank 2	A26461-3 MW 3
Chloromethane	10 U	10 U
Bromomethane	10 U	10 U
Vinyl Chloride	10 U	10 U
Chloroethane	10 U	10 U
Methylene Chloride	5.0 U	5.0 U
1,1-Dichloroethene	5.0 U	5.0 U
1,1-Dichloroethane	5.0 U	5.0 U
trans-1,2-Dichloroethene	5.0 U	5.0 U
Chloroform	5.0 U	5.0 U
1,2-Dichloroethane	5.0 U	5.0 U
1,1,1-Trichloroethane	5.0 U	5.0 U
Carbon Tetrachloride	5.0 U	5.0 U
Bromodichloromethane	5.0 U	5.0 U
1,2-Dichloropropane	5.0 U	5.0 U
trans-1,3-Dichloropropene	5.0 U	5.0 U
Trichloroethene	5.0 U	5.0 U
Dibromochloromethane	5.0 U	5.0 U
1,1,2-Trichloroethane	5.0 U	5.0 U
Benzene	5.0 U	5.0 U
cis-1,3-Dichloropropene	5.0 U	5.0 U
2-Chloroethyl Vinyl Ether	10 U	10 U
Bromoform	5.0 U	5.0 U
Tetrachloroethene	5.0 U	49
Toluene	5.0 U	5.0 U
Chlorobenzene	5.0 U	5.0 U
Ethylbenzene	5.0 U	5.0 U
m-Xylene	5.0 U	5.0 U
o,p-Xylene	5.0 U	5.0 U
2-Methyl-2-Propanol (TBA)	60 U	60 U
2-Methoxy-2-Methylpropane (MTBE)	5.0 U	8.8
Units	(ug/l)	(ug/l)

Attachment 9

Queen City Fuel Oil Co. Report Information

UM
NR

CHEM-PAIR INC. P.O. BOX 10115 NEW BRUNSWICK, N.J. 08906-0115 908-324-0070
FAX 908-324-1504

SUBMISSION FOR A N.J. D.E.P.
DISCHARGE INVESTIGATION AND
CORRECTIVE ACTION REPORT

QUEEN CITY ~~FUEL OIL COMPANY~~
CASE NO. 90-07-13-2201

TANK SERVICE - SITE REMEDIATION

BACKGROUND

TTI was contracted in November, 1990, to evaluate the quality of shallow groundwater beneath the following Underground Storage Tank (UST) systems:

a) One (1) 50,000 gallon fuel oil (in ground abandoned in place)
b) One (1) 20,000 gallon fuel oil (in ground abandoned in place)

The location of these USTs are indicated on Figure 2.0. Documentation on the USTs removal and disposal are indicated under Appendix A.

The Plainfield area around the facility is partly residential/commercial with an estimated population of 1,550 inhabitants within a 2640 feet radius.

LOCAL SUBSURFACE SETTING

Hydrogeology

The Queen City Fuel Oil Company facility is located in a mostly residential area underlain by pleistocene, unstratified (sedimentary) glacial (terminal) moraine deposits. It is an overburden unit estimated to be less than 45 feet in thickness. Depth to bedrock is estimated at approximately 45 - 50 feet.

These morainal deposits are of glacial till, which consists of sand, silty sand, silt, clay, gravel and sandy silt zones. The underlying bedrock is a reddish-brown Triassic-age Brunswick shale. The shale unit structurally strikes N. 51°E and dips 9° to 10° NW.

Groundwater yield is less than 10 gpm within the glacial till zone. Average hydraulic gradient (horizontal) is estimated at 0.002. Local groundwater flow is estimated to be east and south easterly towards the Cedar Brook area (Figure 5.0).

A cursory well search data evaluation within 2640 and 5280 feet radii around the site indicated one (1) domestic well (within 2640 feet radius) and two (2) commercial wells one (1) industrial and one (1) municipal well. None of these wells are hydraulically downgradient of the facility.

SCOPE OF INVESTIGATION - TECHNICAL OVERVIEW (CONTINUED)

Borehole Drilling/Monitoring Well Installations (Continued)

c) Potential organic vapors in the split spoon/borehole were screened to the water table.

d) A 4-inch PVC schedule 40, with screen interval as follows: MW#1 (20'-30'); MW#2 (25'-35'); MW#3 (25'-35') with a slot-size 0.01 were installed.

e) The borehole outside annular (4-inch) was sand packed with certified (clean) #2 morie sand up to a 5.5 feet of the ground surface.

f) Over two-foot of bentonite seal was emplaced over the sand pack.

g) The well was developed 24 hours after installation for over 1.5 hours until the water was left turbid free.

h) There was no visible evidence of contamination i.e. of oily sheen on developed groundwater. The purged groundwater was discharged towards an isolated zone on-site away from potential receptors.

i) The NJDEP well permit number/and well number was permanently affixed to each casing (see Appendix B).

j) The above installations were supervised by TTI's registered hydrogeologist.

k) Two weeks after installation the wells were sampled on January 31, 991 by TTI.

l) Groundwater was purged for over three well casing volumes. Groundwater samples were collected within the upper two (2) feet of the groundwater zone within each well. In field physio-chemical characteristics of the groundwater was recorded on Table 2.0. Collected water samples were submitted within 24 hours to Northeastern Analytical Corporation (NAC) of Marlton, New Jersey.

Monitoring well installation data is summarized on Table 1.0 and schematics are indicated in Figure 4.0 a, b and c.

SCOPE OF INVESTIGATION - TECHNICAL OVERVIEW (CONTINUED)

Borehole Drilling/Monitoring Well Installations (Continued)

The wells were appropriately developed. After a minimum 14-day equilibration period, groundwater samples were collected on January 31,1991 in accordance with the NJDEP Field Sampling Procedures Manual" - 3rd Edition - Hazardous Waste Programs.

Groundwater Analytical Results

Groundwater analytical results at MW#1 for targeted Volatile Organic Compounds (VOCs) indicated, Methylene Chloride at 3(J)(B) ppb, Trans-1,2-Dichloroethene at 9 ppb, 1,1,1-Trichloroethane at 2 (J) ppb, Trichloroethene at 2 (J) ppb and Tetrachloroethane at 57 ppb. Total non-targeted VOCs were not detected.

VOC concentration results for MW#2 indicated Methylene Chloride at 9 (B) ppb, chloroform at 2 (J) ppb and Tetrachloroethene at 91 ppb. Total non-targeted VOCs analyzed, for were non-detected.

Monitoring well No. 3 (MW#3) indicated for targeted VOCs the following results; Methylene Chloride at 4 (J) (B) ppb, Chloroform at 2 (J) ppb and Tetrachloroethane at 98 ppb. Total non-targeted were not detected.

Targeted Base Neutral compounds (B/Ns) for MW#1 indicated Diethylphthalate concentrations at 65 ppb, Fluoranthene at 2 (J) ppb, Pyrene at 3 (J) ppb, Benzo (a) Anthracene at 1(J) ppb, Bis (2-Ethylhexyl) phthalate at 31 ppb, Chrysene at 2 (J) ppb, Benzo (b) fluoranthene at 2 (J) ppb, Benzo (K) fluoranthene at 2 (J) ppb, Benzo (a) Pyrene at 2 (J) ppb, Ideno (1,2,3 -cd) Pyrene at 2 (J) ppb and Benzo (g, h, i) Perylene at 2 (J) ppb. Total non-targeted B/N concentration are estimated at 145 ppb.

Base Neutral concentration results for MW#2 indicated Diethylphthalate at 4 (J) ppb and Bis (2-Ethylhexyl) phthalate at 3 (J) ppb. Total non-targeted B/Ns was detected at an estimated concentration of 122 ppb.

Note:

B:Concentration of methylene chloride found at 6 ppb in Method Blank
(J):Analyzed for, but below the limits of reliable quantification.

SCOPE OF INVESTIGATION - TECHNICAL OVERVIEW (CONTINUED)

Groundwater Analytical Results (Continued)

B/Ns results for MW#3 indicated Diethylphthalate at 3 (J) ppb and Bis (2-Ethylhexyl) phthalate at 79 ppb. An estimated total of 67 ppb for total non-targeted B/Ns was detected.

In conclusion there is a general evidence of shallow groundwater contamination at the facility.

Total Volatile Organic Compounds (VOC) concentrations of 73, 102 and 104 ppb at all three monitoring well locations (MW#1, #2 and #3), are a few orders of magnitude above NJDEP action levels of 10 ppb. Total Base Neutrals (B/Ns) concentrations 257 (J) ppb, 129 (J) ppb and 147 (J) ppb respectively, are also above NJDEP maximum concentration levels of 50 ppb. However, targeted VOCs and B/Ns that are major components of fuel oil are noticeably low to non-detection. Non-targeted (total) B/Ns compounds are relatively of significant high concentrations when compared with targeted B/Ns.

Volatile Organic compounds detected may be attributed to pervasive and transient, shallow groundwater VOC concentrations in the region, which is not necessarily related to an on-site source(s).

In conclusion, the reportedly pumped out fuel oil product in the two (2) USTs may have greatly reduced subsurface contamination. However, the concentration levels detected (especially for total non-targeted B/Ns) are high. These levels could be attributed to in-situ UST leakage problems.

Due to the lower level of aquifer use (Glacial till and shale bedrock zones) in the area and due to the old industrial nature of easterly and southerly areas, further remedial investigation and/or feasibility study is not recommended. However, based upon the location of the USTs, it may be advisable to obtain approval from state certified professional engineer before such USTs were to be left in-situ.

Also soil samples should be collected around the USTs and analyzed for total Petroleum Hydrocarbons to determine potential for petroleum hydrocarbons.

With regards to groundwater results, TTI recommends a second confirmatory round of sampling/analytical activities at all three (3) monitoring wells.

TABLES

Table 1.0

Monitoring Well Installation Data

MW#	ID	TD	DTC	BH (OD)	CT	IT	SI	GE	DTW 01/31/91	Y	WT	L	F	O	S	O/H	GWE 01/31/91	GR
1	01/09/91	40	37.50	8	PVC	U	20-30	94.69	22.50	<3	F	Fill to brunswick red shale frag.	fill and shale	No	No	0	71.71	Medium to large cobblestone and boulders (potentially fill) little sand or silty sand
2	01/10/91	43	42.03	8	PVC	U	25.35	99.03	26.70	<3	F	Fill and weathered shale	Fill and weathered shale	Yes	No	0	71.73	(do)
3	01/11/91	43	41.60	8	PVC	U	25.35	99.09	26.84	<3	F	"do"	"do"	No	No	.4	72.08	(do)

Note:

TD: Total Depth (feet)
DTC: Depth to Casing (feet)
BH(OD): Borehole outside diameter (inches)
CT: Casing Type
IT: Installation Type
SI: Screen Interval (feet)
N/A: Not Available
D.T.B.: Depth to bedrock (feet)
DTW: Depth to water from top of PVC (feet)
Y: Yield (gpm)
L: Lithologic description
F: Formation (geologic)
O: Odor
S: Sheen
O/H: Head space reading (ppm) (OVA) and (HNU)
ID: Installation Date
WL: Well Location
WT: Well Type

Y: Yes
N: No
MW: Monitoring Well
U: Unconsolidated Formation
F: Flush mount
S.C.: Specific conductivity (umhos)
GWE: Groundwater elevation above an assumed datum

Table 2.0

Physio - Chemical Data

January 31, 1991

	MW#1	MW#2	MW#3
Specific Conductivity (umhos)	552	536	630
Temperature (oC)	49	48	48
pH (units)	6.78	6.84	6.78
Odor	No	Yes	No
Sheen	No	No	No
OVA (ppm) (Headspace)	0	5	2

Table 3.0 (a)

Groundwater Analytical Results for Queen City Fuel Oil Company
Concentration - Parts Per Billion (ppb)

VOLATILE ORGANIC COMPOUNDS

Targeted Volatile Organic Compounds

Targeted Volatile Organic Compounds

Monitoring Well Numbers	Location	Methylene Chloride	Trans - 1,2 Dichloroe-thene	1,1,1-Trichloroethane	Trichloro-ethene	Tetrach-loroethane	Chloroform	Total Tentatively Identified VOCs Unknowns	Total VOCs	NDJEP MCL
1	Southwest end adjacent to 50,000 gallon UST	3 (J)(B)	9	2(J)	2(J)	57	ND	ND	73	10
2	Southeast end adjacent to 20,000 gallon UST	9 (B)	ND	ND	ND	91	2(J)	ND	102	10
3	Westerly located at property boundary	4 (J)(B)	2 (J)	ND	ND	98	ND	ND	104	10

Key

(J): Analyzed for, but detected below the limit of reliable quantification
(J*): Estimated concentration
ND: Analyzed for, but not detected
Report: NAC 91L-0327
Source: Northeastern Analytical Corporation (NAC), Marlon, New Jersey
B: Concentration of Methylene Chloride found at 6 ppm in Method Blank

Field Blank
Methylene Chloride - 12B

Trip Blank
Methylene chloride - 3 (J) (B)
Trimethylsilanol (libary search) - 7 (J*)

Table 4.0

Boring Log - Lithologic Types

Description	Approximate Depth (feet)	Approximate Thickness (feet)
MW#1		
Fill (large cobblestones)	0 - 9	9
Reddish M+f weathered shale fragment to	9 - 30	21
Brunswick shale bedrock	>30	>1000
	D.O.B. 40 feet	
MW#2		
Fill (large cobblestones)	0 - 22	22
Reddisch weathered shale fragments	22 - 43	21
Shale bedrock	>43	>1000
	D.O.B. 43 feet	
MW#3		
Fill (large cobblestones)	0 - 14	14
Reddish weathered shale fragments	14 - 33	19
Shale bedrock	>33	>100
	D.O.B. 43 feet	

Note:*D.O.B.: Depth of Boring

Attachment 10

Mobil Service Station Report Information

QUARTERLY SAMPLING REPORT

Mobil Service Station # 15-AFP
1314-26 Route 28
Plainfield, New Jersey
NJDEP Case# 89-09-07-1346
22 May 1991

Prepared for:

Ms. Michelle Cowherd
Mobil Oil Corporation
1200 Route 22 East
Bridgewater, NJ 08807-2943

Prepared by:

Celeste Kallas

Celeste Kallas
Environmental Scientist

Reviewed by:

Edward Van Woudenberg

Edward Van Woudenberg, P.G.
Principal Hydrogeologist

Groundwater & Environmental Services, Inc.
151 Industrial Way East
Eatontown, New Jersey 07724
(908) 389-6500

Enseco
A Corning Company

Mobil - Priority Pollutant Volatile Organics

Method 624

Client Name: Mobil Oil Corporation
Client ID: MW #7
Lab ID: 012811-0001-SA
Matrix: AQUEOUS
Authorized: 18 MAR 91

Sampled: 15 MAR 91
Prepared: NA

Received: 16 MAR 91
Analyzed: 26 MAR 91

Parameter	Result	Units	Reporting Limit	
tert Butyl Methyl ether	210	ug/L	250	J
tert Butyl alcohol	ND	ug/L	250	
Xylenes (total)	ND	ug/L	25	
Chloromethane	ND	ug/L	50	
Bromomethane	ND	ug/L	50	
Vinyl chloride	ND	ug/L	50	
Chloroethane	ND	ug/L	50	
Methylene chloride	ND	ug/L	25	
1,1-Dichloroethene	ND	ug/L	25	
1,1-Dichloroethane	ND	ug/L	25	
1,2-Dichloroethene (cis/trans)	ND	ug/L	25	
Chloroform	ND	ug/L	25	
1,2-Dichloroethane	ND	ug/L	25	
1,1,1-Trichloroethane	ND	ug/L	25	
Carbon tetrachloride	ND	ug/L	25	
Bromodichloromethane	ND	ug/L	25	
1,2-Dichloropropane	ND	ug/L	25	
trans-1,3-Dichloropropene	ND	ug/L	25	
Trichloroethene	ND	ug/L	25	
Dibromochloromethane	ND	ug/L	25	
1,1,2-Trichloroethane	ND	ug/L	25	
Benzene	22	ug/L	25	J
cis-1,3-Dichloropropene	ND	ug/L	25	
2-Chloroethyl vinyl ether	ND	ug/L	50	
Bromoform	ND	ug/L	25	
1,1,2,2-Tetrachloroethane	ND	ug/L	25	
Tetrachloroethene	15	ug/L	25	J1
Toluene	ND	ug/L	25	
Chlorobenzene	ND	ug/L	25	
Ethylbenzene	ND	ug/L	25	

Surrogate	Recovery			
Toluene-d8	98	%	--	
4-Bromofluorobenzene	103	%	--	
1,2-Dichloroethane-d4	95	%	--	

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Neil Costanza

Approved By: Shu-Wen Kao

GROUNDWATER TECHNOLOGY

Monitoring Well MW-12

Project Mobil Service Station 15-AFP Owner Mobil Oil Corporation
Location Plainfield Proj. No. 013315477
Surface Elev. ______ Total Hole Depth 22.0 ft. Diameter 8 in. in.
Top of Casing ______ Water Level Initial 13.5 ft. Static ______
Screen: Dia 4 in. Length 15 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 7 ft. Type Sched. 40 PVC
Fill Material Sand Rig/Core Mobile B-57
Drill Co. GT Drilling Method Hollow Stem Auger
Driller M. Kavlunus Log By M. Gondick Date 12/17/93 Permit # ______
Checked By J. Newman License No. ______

See Site Map For Boring Location

COMMENTS:

Soil Sample MW-12 (13–13.5) was analyzed for VO+ID by 8240, MTBE and TBA.

Depth (ft.)	PID (ppm)	Sample ID	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0			Asp	Asphalt.
0–6			GC	Reddish, moist, fine SAND with some gravel fill.
6–8			GW	GRAVEL.
8–12	8.5 (10)		SM	Reddish, moist, fine SAND and SILT, trace clay.
12	185 (12)	SS-1	GW	GRAVEL.
12.5–22	14.0 (14)		SM	Reddish-brown, wet, fine SAND. trace clay.
22				End of boring

ATTACHMENT K

KIM WARD

NJDEP MOBILE ENVIRONMENTAL LABORATORY

FINAL REPORT

FORMER STOP & WASH

GROUND WATER ANALYSIS

904-906 SOUTH AVENUE, PLAINFIELD CITY,

UNION COUNTY, NJ 07060

SAMPLES RECEIVED: 8 JULY 2008

REPORT ISSUED: 18 JULY 2008

JOBCODE: A531630P

ANALYZED BY

KENNETH GLASSER
MOBILE LABORATORY PROGRAM MANAGER

K

1.0 INTRODUCTION

On 8 July 2008, aqueous samples collected from the former Stop and Wash site, Plainfield City, Union County, were delivered to the NJDEP Mobile Environmental Laboratory for analysis. The samples were analyzed for EPA 524 Volatile Organic Compounds, including Revision 4.0 analytes, by Purge and Trap Capillary Column Gas Chromatography Mass Spectrometry (GC/MS). Results are presented in the Analytical Results Reports, attached.

2.0 PROCEDURES

2.1 Field Sampling Procedures
A field sampling team led by Ms Kim Ward, BEMSA, collected aqueous samples in 40ml glass VOA vials. Samples were preserved with HCl and stored at 4^0C until analysis.

2.2 Analytical Method
Samples were analyzed by the following method: Mobile Lab Method 524 - Measurement of Purgeable VOCs In Water by Capillary Column GC/MS.

3.0 REPORTING

3.1 Internal Standards and Surrogate Spikes
Internal Standards (ISTD) and System Monitoring Compounds (SMC) have been added to the sample to check instrument performance and the analytical technique. <u>They are not indicative of sample contamination</u>. Continuing Calibration Standards were analyzed to verify GC/MS tune integrity.

3.2 Sample Dilutions
Compounds tagged with an "E" have exceeded the calibration range and should be evaluated using a diluted sample result, if supplied. Diluted sample results have been corrected using the dilution factor.

3.3 Method 524 Revision 4.0 Compounds
Results for Revision 4.0 analytes are presented in the Analytical Results Reports entitled, “Method 524: Version 4 Update With Ketones.” The MRLs for most Revision 4.0 compounds are preliminary and subject to change as method development continues.

3.4 Nonconformance Summary
None observed.

Please direct questions or comments to Kenneth Glasser or Corey Lakin at the NJDEP Mobile Environmental Laboratory, Windsor Industrial Park, Building 12, Windsor, NJ, 08561. Phone: 609-371-3981 Fax: 609-371-3986.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 6/24/08
Date Analyzed: 07/ 2/08 21:26
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: S&W FILL BLK
Lab Data File Name: 07020859.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	5.33E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	ND				82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	ND				95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	ND				165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.37	*SMC	30.50	4.09E+05	95.00	173.95	0.4	96.8
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	20.08	*SMC	36.20	3.95E+05	151.90	149.90	0.4	100.4
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK
"ISTD" = INTERNAL STANDARD
"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT.
USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 6/24/08
Date Analyzed: 07/ 2/08 21:26
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: S&W FILL BLK
Lab Data File Name: 07020859.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	5.32E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.63		*SMC	30.50	1.65E+06	95.00	173.95	0.4	98.1
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.68		*SMC	36.20	1.66E+06	152.05	150.05	0.4	98.4
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT.
USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 22:20
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: TB
Lab Data File Name: 07080858.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.40E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	ND				82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	ND				95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	ND				165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.44	*SMC	30.50	3.75E+05	95.00	173.95	0.4	97.2
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.91	*SMC	36.20	3.68E+05	151.90	149.90	0.4	99.6
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

Cwl

GC/MS Operator CWL

KG

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK
"ISTD" = INTERNAL STANDARD
"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT.
USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 22:20
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: TB
Lab Data File Name: 07080858.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	4.40E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.64		*SMC	30.50	1.50E+06	95.00	173.95	0.4	98.2
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.90		*SMC	36.20	1.54E+06	152.05	150.05	0.4	99.5
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 23:18
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-1A
Lab Data File Name: 07080859.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.40E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	0.21	J	13.33	1.06E+04	95.95	97.95	0.4
14)	chloroform	0.67		13.72	5.20E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.66		17.63	3.37E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	1.89		23.59	1.39E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

# Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38) styrene	ND				104.05	78.10	0.4	
39) isopropylbenzene	ND				120.00	105.00	0.4	
40) bromoform	ND				172.90	174.90	0.4	
41) 1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42) 4-bromofluorobenzene	19.50	*SMC	30.50	3.76E+05	95.00	173.95	0.4	97.5
43) 1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44) n-propylbenzene	ND				120.00	91.00	0.4	
45) bromobenzene	ND				155.95	157.95	0.4	
46) 1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47) 2-chlorotoluene	ND				91.05	126.05	0.4	
48) 4-chlorotoluene	ND				91.15	126.05	0.4	
49) tert-butylbenzene	ND				119.15	91.15	0.4	
50) 1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51) sec-butylbenzene	ND				134.00	105.00	0.4	
52) 4-isopropyltoluene	ND				134.00	119.00	0.4	
53) 1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54) 1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55) n-butylbenzene	ND				134.00	91.00	0.4	
56) 1,2-dichlorobenzene-d4	19.86	*SMC	36.20	3.67E+05	151.90	149.90	0.4	99.3
57) 1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58) 1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59) 1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60) hexachlorobutadiene	ND				224.90	226.90	0.4	
61) naphthalene	ND				128.05	0.00	1.0	
62) 1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK
"ISTD" = INTERNAL STANDARD
"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 23:18
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-1A
Lab Data File Name: 07080859.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.51	4.40E+06	96.10	70.10	0.4	
2) diethyl ether	ND					59.10	45.05	2.0	
3) acetone	ND					43.00	58.00	20.0	
4) 3-chloro-1-propene	ND					76.00	41.05	20.0	
5) carbon disulfide	ND					76.00	0.00	20.0	
6) methyl-t-butyl ether	ND					73.10	57.10	2.0	
7) acrylonitrile	ND					52.10	53.10	20.0	
8) 2-butanone	ND					43.00	72.00	20.0	
9) methacrylonitrile	ND					67.10	52.10	20.0	
10) methyl acrylate	ND					55.10	85.10	20.0	
11) tetrahydrofuran	ND					71.10	72.10	20.0	
12) 1-chlorobutane	ND					56.10	49.00	20.0	
13) methylmethacrylate	ND					69.10	99.00	20.0	
14) 2-nitropropane	ND					43.05	45.95	20.0	
15) methyl isobutyl ketone	ND					43.00	58.00	20.0	
16) 1,1-dichloropropanone	ND					43.00	82.95	20.0	
17) ethyl methacrylate	ND					69.10	99.10	20.0	
18) 2-hexanone	ND					43.00	58.00	20.0	
19) 4-bromofluorobenzene	19.63		*SMC	30.50	1.50E+06	95.00	173.95	0.4	98.1
20) 1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21) pentachloroethane	ND					116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	19.95		*SMC	36.20	1.54E+06	152.05	150.05	0.4	99.7
23) hexachloroethane	ND					116.9	118.9	1.0	
24) nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 12:15
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-1B
Lab Data File Name: 07080860.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.42E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	0.21	J	13.32	1.05E+04	95.95	97.95	0.4
14)	chloroform	0.67		13.72	5.28E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.66		17.64	3.39E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	1.64		23.58	1.21E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.28	*SMC	30.50	3.73E+05	95.00	173.95	0.4	96.4
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.86	*SMC	36.20	3.68E+05	151.90	149.90	0.4	99.3
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

CWL

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
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Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 12:15
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-1B
Lab Data File Name: 07080860.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	4.42E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.61		*SMC	30.50	1.50E+06	95.00	173.95	0.4	98.0
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.96		*SMC	36.20	1.55E+06	152.05	150.05	0.4	99.8
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
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"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 01:13
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-2A
Lab Data File Name: 07080861.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.41E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	0.78		13.72	6.08E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.63		17.64	3.24E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	2.76		23.58	2.03E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.24	*SMC	30.50	3.72E+05	95.00	173.95	0.4	96.2
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.85	*SMC	36.20	3.67E+05	151.90	149.90	0.4	99.2
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK
"ISTD" = INTERNAL STANDARD
"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 01:13
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-2A
Lab Data File Name: 07080861.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.51	4.41E+06	96.10	70.10	0.4	
2) diethyl ether	ND					59.10	45.05	2.0	
3) acetone	ND					43.00	58.00	20.0	
4) 3-chloro-1-propene	ND					76.00	41.05	20.0	
5) carbon disulfide	ND					76.00	0.00	20.0	
6) methyl-t-butyl ether	ND					73.10	57.10	2.0	
7) acrylonitrile	ND					52.10	53.10	20.0	
8) 2-butanone	ND					43.00	72.00	20.0	
9) methacrylonitrile	ND					67.10	52.10	20.0	
10) methyl acrylate	ND					55.10	85.10	20.0	
11) tetrahydrofuran	ND					71.10	72.10	20.0	
12) 1-chlorobutane	ND					56.10	49.00	20.0	
13) methylmethacrylate	ND					69.10	99.00	20.0	
14) 2-nitropropane	ND					43.05	45.95	20.0	
15) methyl isobutyl ketone	ND					43.00	58.00	20.0	
16) 1,1-dichloropropanone	ND					43.00	82.95	20.0	
17) ethyl methacrylate	ND					69.10	99.10	20.0	
18) 2-hexanone	ND					43.00	58.00	20.0	
19) 4-bromofluorobenzene	19.60		*SMC	30.50	1.50E+06	95.00	173.95	0.4	98.0
20) 1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21) pentachloroethane	ND					116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	19.92		*SMC	36.20	1.54E+06	152.05	150.05	0.4	99.6
23) hexachloroethane	ND					116.9	118.9	1.0	
24) nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 02:10
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-2B
Lab Data File Name: 07080862.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.39E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	0.80		13.71	6.21E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.66		17.64	3.40E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	2.49		23.59	1.82E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.33	*SMC	30.50	3.72E+05	95.00	173.95	0.4	96.7
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	20.01	*SMC	36.20	3.69E+05	151.90	149.90	0.4	100.0
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 02:10
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-2B
Lab Data File Name: 07080862.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	4.39E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.68		*SMC	30.50	1.50E+06	95.00	173.95	0.4	98.4
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.96		*SMC	36.20	1.54E+06	152.05	150.05	0.4	99.8
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 03:08
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-3A
Lab Data File Name: 07080863.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.28E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	1.06		13.72	8.06E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.50		17.64	2.51E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	2.70		23.59	1.93E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.15	*SMC	30.50	3.59E+05	95.00	173.95	0.4	95.7
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.81	*SMC	36.20	3.56E+05	151.90	149.90	0.4	99.1
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

BG

Mobile Laboratory Manager

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NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 03:08
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-3A
Lab Data File Name: 07080863.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.51	4.28E+06	96.10	70.10	0.4	
2) diethyl ether	ND					59.10	45.05	2.0	
3) acetone	ND					43.00	58.00	20.0	
4) 3-chloro-1-propene	ND					76.00	41.05	20.0	
5) carbon disulfide	ND					76.00	0.00	20.0	
6) methyl-t-butyl ether	ND					73.10	57.10	2.0	
7) acrylonitrile	ND					52.10	53.10	20.0	
8) 2-butanone	ND					43.00	72.00	20.0	
9) methacrylonitrile	ND					67.10	52.10	20.0	
10) methyl acrylate	ND					55.10	85.10	20.0	
11) tetrahydrofuran	ND					71.10	72.10	20.0	
12) 1-chlorobutane	ND					56.10	49.00	20.0	
13) methylmethacrylate	ND					69.10	99.00	20.0	
14) 2-nitropropane	ND					43.05	45.95	20.0	
15) methyl isobutyl ketone	ND					43.00	58.00	20.0	
16) 1,1-dichloropropanone	ND					43.00	82.95	20.0	
17) ethyl methacrylate	ND					69.10	99.10	20.0	
18) 2-hexanone	ND					43.00	58.00	20.0	
19) 4-bromofluorobenzene	19.62		*SMC	30.50	1.46E+06	95.00	173.95	0.4	98.1
20) 1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21) pentachloroethane	ND					116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	19.87		*SMC	36.20	1.49E+06	152.05	150.05	0.4	99.3
23) hexachloroethane	ND					116.9	118.9	1.0	
24) nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 04:05
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: MW-3B
Lab Data File Name: 07080864.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.50	4.40E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	1.03		13.72	8.06E+04	82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	0.49		17.63	2.51E+04	95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	2.25		23.59	1.65E+05	165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.27	*SMC	30.51	3.71E+05	95.00	173.95	0.4	96.3
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.52	*SMC	36.20	3.60E+05	151.90	149.90	0.4	97.6
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

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"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

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NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 9/08 04:05
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: MW-3B
Lab Data File Name: 07080864.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.50	4.40E+06	96.10	70.10	0.4	
2) diethyl ether	ND					59.10	45.05	2.0	
3) acetone	ND					43.00	58.00	20.0	
4) 3-chloro-1-propene	ND					76.00	41.05	20.0	
5) carbon disulfide	ND					76.00	0.00	20.0	
6) methyl-t-butyl ether	ND					73.10	57.10	2.0	
7) acrylonitrile	ND					52.10	53.10	20.0	
8) 2-butanone	ND					43.00	72.00	20.0	
9) methacrylonitrile	ND					67.10	52.10	20.0	
10) methyl acrylate	ND					55.10	85.10	20.0	
11) tetrahydrofuran	ND					71.10	72.10	20.0	
12) 1-chlorobutane	ND					56.10	49.00	20.0	
13) methylmethacrylate	ND					69.10	99.00	20.0	
14) 2-nitropropane	ND					43.05	45.95	20.0	
15) methyl isobutyl ketone	ND					43.00	58.00	20.0	
16) 1,1-dichloropropanone	ND					43.00	82.95	20.0	
17) ethyl methacrylate	ND					69.10	99.10	20.0	
18) 2-hexanone	ND					43.00	58.00	20.0	
19) 4-bromofluorobenzene	19.50		*SMC	30.51	1.49E+06	95.00	173.95	0.4	97.5
20) 1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21) pentachloroethane	ND					116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	19.76		*SMC	36.20	1.52E+06	152.05	150.05	0.4	98.8
23) hexachloroethane	ND					116.9	118.9	1.0	
24) nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
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SYSTEM PERFORMANCE REPORTS

Calibration Standards

Method Blanks

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/2/08
Date Analyzed: 07/ 2/08 16:39
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: 524 30ppb
Lab Data File Name: 07020854.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	5.32E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	30.00		4.86	1.47E+06	85.05	87.05	0.4
3)	chloromethane	30.00		5.45	1.49E+06	50.00	52.00	0.4
4)	vinyl chloride	30.00		5.71	1.69E+06	62.05	64.05	0.4
5)	bromomethane	30.00		6.75	1.20E+06	94.05	96.05	0.4
6)	chloroethane	30.00		6.87	1.20E+06	64.05	66.05	0.4
7)	trichlorofluoromethane	30.00		7.42	2.73E+06	100.95	102.95	0.4
8)	1,1 dichloroethene	30.00		8.85	2.26E+06	61.00	95.95	0.4
9)	methylene chloride	30.00		10.01	1.37E+06	83.95	49.00	0.4
10)	trans-1,2-dichloroethene	30.00		10.68	1.84E+06	95.95	61.00	0.4
11)	1,1 dichloroethane	30.00		11.75	2.75E+06	63.00	65.00	0.4
12)	2,2 dichloropropane	30.00		13.15	2.35E+06	77.00	96.95	0.4
13)	cis-1,2-dichloroethene	30.00		13.31	1.77E+06	95.95	97.95	0.4
14)	chloroform	30.00		13.71	2.78E+06	82.95	84.95	0.4
15)	bromochloromethane	30.00		14.22	6.46E+05	127.95	129.95	0.4
16)	1,1,1 trichloroethane	30.00		14.76	2.77E+06	96.95	99.00	0.4
17)	1,1 dichloropropene	30.00		15.16	2.31E+06	75.00	109.95	0.4
18)	carbon tetrachloride	30.00		15.47	2.61E+06	116.95	118.95	0.4
19)	benzene	30.00		15.98	6.74E+06	78.00	77.00	0.4
20)	1,2 dichloroethane	30.00		15.94	1.25E+06	62.00	98.05	0.4
21)	trichloroethene	30.00		17.63	1.82E+06	95.00	130.00	0.4
22)	1,2 dichloropropane	30.00		18.18	1.28E+06	63.00	76.00	0.4
23)	bromodichloromethane	30.00		18.93	1.66E+06	82.95	84.95	0.4
24)	dibromomethane	30.00		19.16	5.07E+05	93.00	95.00	0.4
25)	cis-1,3-dichloropropene	30.00		20.50	1.92E+06	75.00	109.95	0.4
26)	toluene	30.00		21.51	4.64E+06	92.00	91.00	0.4
27)	trans-1,3-dichloropropene	30.00		22.08	1.45E+06	75.00	109.95	0.4
28)	1,1,2 trichloroethane	30.00		22.61	6.13E+05	83.00	85.00	0.4
29)	1,3 dichloropropane	30.00		23.44	1.39E+06	76.00	78.00	0.4
30)	tetrachloroethene	30.00		23.59	2.51E+06	165.90	128.95	0.4
31)	dibromochloromethane	30.00		24.40	1.02E+06	129.00	127.00	0.4
32)	1,2 dibromoethane	30.00		25.07	7.18E+05	106.95	108.95	0.4
33)	ethylbenzene	30.00		26.50	2.96E+06	106.00	91.00	0.4
34)	chlorobenzene	30.00		26.41	5.01E+06	112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	30.00		26.52	1.62E+06	130.95	132.95	0.4
36)	m,p-xylene	60.00		26.74	7.25E+06	106.15	91.05	0.4
37)	o-xylene	30.00		28.30	3.37E+06	106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	30.00		28.44	5.03E+06	104.05	78.10	0.4	
39)	isopropylbenzene	30.00		29.50	2.61E+06	120.00	105.00	0.4	
40)	bromoform	30.00		29.80	5.35E+05	172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	30.00		30.23	7.33E+05	82.95	84.95	0.4	
42)	4-bromofluorobenzene	20.00	*SMC	30.50	4.22E+05	95.00	173.95	0.4	100.0
43)	1,2,3 trichloropropane	30.00		30.78	2.55E+05	110.00	112.00	2.0	
44)	n-propylbenzene	30.00		30.94	2.71E+06	120.00	91.00	0.4	
45)	bromobenzene	30.00		31.24	2.04E+06	155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	30.00		31.50	4.03E+06	120.00	105.00	0.4	
47)	2-chlorotoluene	30.00		31.66	5.78E+06	91.05	126.05	0.4	
48)	4-chlorotoluene	30.00		31.82	5.86E+06	91.15	126.05	0.4	
49)	tert-butylbenzene	30.00		32.78	7.04E+06	119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	30.00		32.94	3.64E+06	120.00	105.00	0.4	
51)	sec-butylbenzene	30.00		33.55	2.14E+06	134.00	105.00	0.4	
52)	4-isopropyltoluene	30.00		34.05	2.50E+06	134.00	119.00	0.4	
53)	1,3 dichlorobenzene	30.00		34.51	4.35E+06	145.95	147.95	0.4	
54)	1,4 dichlorobenzene	30.00		34.91	4.19E+06	145.95	147.95	0.4	
55)	n-butylbenzene	30.00		35.56	2.37E+06	134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	20.00	*SMC	36.20	3.94E+05	151.90	149.90	0.4	100.0
57)	1,2 dichlorobenzene	30.00		36.30	3.39E+06	145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	30.00		38.73	8.76E+04	75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	30.00		40.81	2.39E+06	180.00	182.00	0.4	
60)	hexachlorobutadiene	30.00		41.10	1.63E+06	224.90	226.90	0.4	
61)	naphthalene	30.00		41.53	2.11E+06	128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	30.00		42.14	1.45E+06	180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/2/08
Date Analyzed: 07/ 2/08 17:36
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: UPDATE 40ppb
Lab Data File Name: 07020855.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.51	5.44E+06	96.10	70.10	0.4	
2) diethyl ether	40.00			8.01	1.04E+06	59.10	45.05	2.0	
3) acetone	40.00			8.57	1.40E+05	43.00	58.00	20.0	
4) 3-chloro-1-propene	40.00			9.71	1.18E+06	76.00	41.05	20.0	
5) carbon disulfide	40.00			10.20	6.26E+06	76.00	0.00	20.0	
6) methyl-t-butyl ether	40.00			10.24	3.36E+06	73.10	57.10	2.0	
7) acrylonitrile	40.00			10.33	1.71E+05	52.10	53.10	20.0	
8) 2-butanone	40.00			12.78	2.36E+05	43.00	72.00	20.0	
9) methacrylonitrile	40.00			13.53	3.01E+05	67.10	52.10	20.0	
10) methyl acrylate	40.00			13.49	5.69E+05	55.10	85.10	20.0	
11) tetrahydrofuran	40.00			14.29	7.89E+04	71.10	72.10	20.0	
12) 1-chlorobutane	40.00			14.74	4.31E+06	56.10	49.00	20.0	
13) methylmethacrylate	40.00			18.21	5.69E+05	69.10	99.00	20.0	
14) 2-nitropropane	40.00			19.08	1.59E+05	43.05	45.95	20.0	
15) methyl isobutyl ketone	40.00			19.74	5.98E+05	43.00	58.00	20.0	
16) 1,1-dichloropropanone	40.00			20.38	1.88E+05	43.00	82.95	20.0	
17) ethyl methacrylate	40.00			21.88	1.31E+06	69.10	99.10	20.0	
18) 2-hexanone	40.00			22.49	3.95E+05	43.00	58.00	20.0	
19) 4-bromofluorobenzene	20.00		*SMC	30.50	1.72E+06	95.00	173.95	0.4	100.0
20) 1,4-dichloro-2-butene(trans)	40.00			31.01	1.66E+05	53.00	88.00	1.0	
21) pentachloroethane	40.00			33.11	1.33E+06	116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	20.00		*SMC	36.20	1.72E+06	152.05	150.05	0.4	100.0
23) hexachloroethane	40.00			37.47	1.83E+06	116.9	118.9	1.0	
24) nitrobenzene	40.00			38.97	5.65E+03	51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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"J" = <MRL
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"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/2/08
Date Analyzed: 07/ 2/08 19:31
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: METHOD BLK
Lab Data File Name: 07020857.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	5.43E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	ND				82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	ND				95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	ND				165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.25	*SMC	30.50	4.14E+05	95.00	173.95	0.4	96.2
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	20.16	*SMC	36.20	4.04E+05	151.90	149.90	0.4	100.8
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
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"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/2/08
Date Analyzed: 07/ 2/08 19:31
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: METHOD BLK
Lab Data File Name: 07020857.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	5.42E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.68		*SMC	30.50	1.68E+06	95.00	173.95	0.4	98.4
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.81		*SMC	36.20	1.70E+06	152.05	150.05	0.4	99.0
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 18:30
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: 524 30ppb
Lab Data File Name: 07080854.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.22E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	30.00		4.87	6.20E+05	85.05	87.05	0.4
3)	chloromethane	30.00		5.46	8.55E+05	50.00	52.00	0.4
4)	vinyl chloride	30.00		5.72	1.10E+06	62.05	64.05	0.4
5)	bromomethane	30.00		6.77	8.30E+05	94.05	96.05	0.4
6)	chloroethane	30.00		6.89	8.38E+05	64.05	66.05	0.4
7)	trichlorofluoromethane	30.00		7.43	2.02E+06	100.95	102.95	0.4
8)	1,1 dichloroethene	30.00		8.87	1.69E+06	61.00	95.95	0.4
9)	methylene chloride	30.00		10.03	1.10E+06	83.95	49.00	0.4
10)	trans-1,2-dichloroethene	30.00		10.70	1.45E+06	95.95	61.00	0.4
11)	1,1 dichloroethane	30.00		11.76	2.16E+06	63.00	65.00	0.4
12)	2,2 dichloropropane	30.00		13.16	1.86E+06	77.00	96.95	0.4
13)	cis-1,2-dichloroethene	30.00		13.33	1.43E+06	95.95	97.95	0.4
14)	chloroform	30.00		13.72	2.24E+06	82.95	84.95	0.4
15)	bromochloromethane	30.00		14.23	5.38E+05	127.95	129.95	0.4
16)	1,1,1 trichloroethane	30.00		14.77	2.23E+06	96.95	99.00	0.4
17)	1,1 dichloropropene	30.00		15.16	1.84E+06	75.00	109.95	0.4
18)	carbon tetrachloride	30.00		15.48	2.13E+06	116.95	118.95	0.4
19)	benzene	30.00		15.99	5.38E+06	78.00	77.00	0.4
20)	1,2 dichloroethane	30.00		15.94	1.03E+06	62.00	98.05	0.4
21)	trichloroethene	30.00		17.64	1.48E+06	95.00	130.00	0.4
22)	1,2 dichloropropane	30.00		18.19	1.03E+06	63.00	76.00	0.4
23)	bromodichloromethane	30.00		18.93	1.38E+06	82.95	84.95	0.4
24)	dibromomethane	30.00		19.16	4.23E+05	93.00	95.00	0.4
25)	cis-1,3-dichloropropene	30.00		20.51	1.59E+06	75.00	109.95	0.4
26)	toluene	30.00		21.51	3.77E+06	92.00	91.00	0.4
27)	trans-1,3-dichloropropene	30.00		22.08	1.21E+06	75.00	109.95	0.4
28)	1,1,2 trichloroethane	30.00		22.62	5.14E+05	83.00	85.00	0.4
29)	1,3 dichloropropane	30.00		23.44	1.16E+06	76.00	78.00	0.4
30)	tetrachloroethene	30.00		23.59	2.11E+06	165.90	128.95	0.4
31)	dibromochloromethane	30.00		24.40	8.90E+05	129.00	127.00	0.4
32)	1,2 dibromoethane	30.00		25.07	6.09E+05	106.95	108.95	0.4
33)	ethylbenzene	30.00		26.50	2.44E+06	106.00	91.00	0.4
34)	chlorobenzene	30.00		26.41	4.17E+06	112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	30.00		26.52	1.37E+06	130.95	132.95	0.4
36)	m,p-xylene	60.00		26.75	5.99E+06	106.15	91.05	0.4
37)	o-xylene	30.00		28.30	2.80E+06	106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	30.00		28.45	4.17E+06	104.05	78.10	0.4	
39)	isopropylbenzene	30.00		29.51	2.19E+06	120.00	105.00	0.4	
40)	bromoform	30.00		29.80	4.91E+05	172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	30.00		30.23	6.28E+05	82.95	84.95	0.4	
42)	4-bromofluorobenzene	20.00	*SMC	30.50	3.70E+05	95.00	173.95	0.4	100.0
43)	1,2,3 trichloropropane	30.00		30.78	2.18E+05	110.00	112.00	2.0	
44)	n-propylbenzene	30.00		30.94	2.28E+06	120.00	91.00	0.4	
45)	bromobenzene	30.00		31.24	1.74E+06	155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	30.00		31.50	3.39E+06	120.00	105.00	0.4	
47)	2-chlorotoluene	30.00		31.67	4.78E+06	91.05	126.05	0.4	
48)	4-chlorotoluene	30.00		31.82	4.85E+06	91.15	126.05	0.4	
49)	tert-butylbenzene	30.00		32.79	5.97E+06	119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	30.00		32.95	3.08E+06	120.00	105.00	0.4	
51)	sec-butylbenzene	30.00		33.56	1.84E+06	134.00	105.00	0.4	
52)	4-isopropyltoluene	30.00		34.05	2.14E+06	134.00	119.00	0.4	
53)	1,3 dichlorobenzene	30.00		34.52	3.70E+06	145.95	147.95	0.4	
54)	1,4 dichlorobenzene	30.00		34.91	3.58E+06	145.95	147.95	0.4	
55)	n-butylbenzene	30.00		35.56	2.03E+06	134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	20.00	*SMC	36.20	3.54E+05	151.90	149.90	0.4	100.0
57)	1,2 dichlorobenzene	30.00		36.30	2.95E+06	145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	30.00		38.73	7.84E+04	75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	30.00		40.82	2.21E+06	180.00	182.00	0.4	
60)	hexachlorobutadiene	30.00		41.10	1.49E+06	224.90	226.90	0.4	
61)	naphthalene	30.00		41.54	1.99E+06	128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	30.00		42.14	1.38E+06	180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

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NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 19:28
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: UPDATES 40ppb
Lab Data File Name: 07080855.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

# Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1) fluorobenzene	20.00		*ISTD	16.51	4.51E+06	96.10	70.10	0.4	
2) diethyl ether	40.00			8.00	8.25E+05	59.10	45.05	2.0	
3) acetone	40.00			8.57	1.19E+05	43.00	58.00	20.0	
4) 3-chloro-1-propene	40.00			9.71	9.31E+05	76.00	41.05	20.0	
5) carbon disulfide	40.00			10.19	4.92E+06	76.00	0.00	20.0	
6) methyl-t-butyl ether	40.00			10.23	2.73E+06	73.10	57.10	2.0	
7) acrylonitrile	40.00			10.32	1.36E+05	52.10	53.10	20.0	
8) 2-butanone	40.00			12.78	1.92E+05	43.00	72.00	20.0	
9) methacrylonitrile	40.00			13.52	2.43E+05	67.10	52.10	20.0	
10) methyl acrylate	40.00			13.49	4.52E+05	55.10	85.10	20.0	
11) tetrahydrofuran	40.00			14.29	6.36E+04	71.10	72.10	20.0	
12) 1-chlorobutane	40.00			14.73	3.39E+06	56.10	49.00	20.0	
13) methylmethacrylate	40.00			18.21	4.56E+05	69.10	99.00	20.0	
14) 2-nitropropane	40.00			19.08	1.29E+05	43.05	45.95	20.0	
15) methyl isobutyl ketone	40.00			19.74	4.94E+05	43.00	58.00	20.0	
16) 1,1-dichloropropanone	40.00			20.38	1.59E+05	43.00	82.95	20.0	
17) ethyl methacrylate	40.00			21.87	1.05E+06	69.10	99.10	20.0	
18) 2-hexanone	40.00			22.49	3.26E+05	43.00	58.00	20.0	
19) 4-bromofluorobenzene	20.00		*SMC	30.50	1.56E+06	95.00	173.95	0.4	100.0
20) 1,4-dichloro-2-butene(trans)	40.00			31.01	1.38E+05	53.00	88.00	1.0	
21) pentachloroethane	40.00			33.12	1.08E+06	116.90	118.90	1.0	
22) 1,4 dichlorobenzene-d4	20.00		*SMC	36.20	1.58E+06	152.05	150.05	0.4	100.0
23) hexachloroethane	40.00			37.47	1.49E+06	116.9	118.9	1.0	
24) nitrobenzene	40.00			38.97	4.54E+03	51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

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"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 21:23
ID: AGILENT TECHNOLOGIES,5973N,0,3.01.57

Field Sample Name: METHOD BLK
Lab Data File Name: 07080857.D
Sample Matrix: Aqueous Dilution=1/ 1
GC Column: VOCOL 60m, .25mm ID, 1.5um film

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL
1)	fluorobenzene	20.00	*ISTD	16.51	4.37E+06	96.00	69.95	0.4
2)	dichlorodifluoromethane	ND				85.05	87.05	0.4
3)	chloromethane	ND				50.00	52.00	0.4
4)	vinyl chloride	ND				62.05	64.05	0.4
5)	bromomethane	ND				94.05	96.05	0.4
6)	chloroethane	ND				64.05	66.05	0.4
7)	trichlorofluoromethane	ND				100.95	102.95	0.4
8)	1,1 dichloroethene	ND				61.00	95.95	0.4
9)	methylene chloride	ND				83.95	49.00	0.4
10)	trans-1,2-dichloroethene	ND				95.95	61.00	0.4
11)	1,1 dichloroethane	ND				63.00	65.00	0.4
12)	2,2 dichloropropane	ND				77.00	96.95	0.4
13)	cis-1,2-dichloroethene	ND				95.95	97.95	0.4
14)	chloroform	ND				82.95	84.95	0.4
15)	bromochloromethane	ND				127.95	129.95	0.4
16)	1,1,1 trichloroethane	ND				96.95	99.00	0.4
17)	1,1 dichloropropene	ND				75.00	109.95	0.4
18)	carbon tetrachloride	ND				116.95	118.95	0.4
19)	benzene	ND				78.00	77.00	0.4
20)	1,2 dichloroethane	ND				62.00	98.05	0.4
21)	trichloroethene	ND				95.00	130.00	0.4
22)	1,2 dichloropropane	ND				63.00	76.00	0.4
23)	bromodichloromethane	ND				82.95	84.95	0.4
24)	dibromomethane	ND				93.00	95.00	0.4
25)	cis-1,3-dichloropropene	ND				75.00	109.95	0.4
26)	toluene	ND				92.00	91.00	0.4
27)	trans-1,3-dichloropropene	ND				75.00	109.95	0.4
28)	1,1,2 trichloroethane	ND				83.00	85.00	0.4
29)	1,3 dichloropropane	ND				76.00	78.00	0.4
30)	tetrachloroethene	ND				165.90	128.95	0.4
31)	dibromochloromethane	ND				129.00	127.00	0.4
32)	1,2 dibromoethane	ND				106.95	108.95	0.4
33)	ethylbenzene	ND				106.00	91.00	0.4
34)	chlorobenzene	ND				112.05	77.00	0.4
35)	1,1,1,2 tetrachloroethane	ND				130.95	132.95	0.4
36)	m,p-xylene	ND				106.15	91.05	0.4
37)	o-xylene	ND				106.15	91.15	0.4

#	Compound Name	Concentration PPB	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL	SMC %Recov
38)	styrene	ND				104.05	78.10	0.4	
39)	isopropylbenzene	ND				120.00	105.00	0.4	
40)	bromoform	ND				172.90	174.90	0.4	
41)	1,1,2,2 tetrachloroethane	ND				82.95	84.95	0.4	
42)	4-bromofluorobenzene	19.39	*SMC	30.50	3.71E+05	95.00	173.95	0.4	96.9
43)	1,2,3 trichloropropane	ND				110.00	112.00	2.0	
44)	n-propylbenzene	ND				120.00	91.00	0.4	
45)	bromobenzene	ND				155.95	157.95	0.4	
46)	1,3,5 trimethylbenzene	ND				120.00	105.00	0.4	
47)	2-chlorotoluene	ND				91.05	126.05	0.4	
48)	4-chlorotoluene	ND				91.15	126.05	0.4	
49)	tert-butylbenzene	ND				119.15	91.15	0.4	
50)	1,2,4 trimethylbenzene	ND				120.00	105.00	0.4	
51)	sec-butylbenzene	ND				134.00	105.00	0.4	
52)	4-isopropyltoluene	ND				134.00	119.00	0.4	
53)	1,3 dichlorobenzene	ND				145.95	147.95	0.4	
54)	1,4 dichlorobenzene	ND				145.95	147.95	0.4	
55)	n-butylbenzene	ND				134.00	91.00	0.4	
56)	1,2-dichlorobenzene-d4	19.94	*SMC	36.20	3.66E+05	151.90	149.90	0.4	99.7
57)	1,2 dichlorobenzene	ND				145.95	147.95	0.4	
58)	1,2-dibromo-3-chloropropane	ND				75.00	154.95	2.0	
59)	1,2,4 trichlorobenzene	ND				180.00	182.00	0.4	
60)	hexachlorobutadiene	ND				224.90	226.90	0.4	
61)	naphthalene	ND				128.05	0.00	1.0	
62)	1,2,3 trichlorobenzene	ND				180.00	182.00	1.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK
"ISTD" = INTERNAL STANDARD
"SMC" = SYSTEM MONITORING COMPOUND
"E" = CONCENTRATION OF SPECIFIC COMPOUND EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE RESULT FROM DILUTED SAMPLE WHEN AVAILABLE.

Jones, R. P., and Clarke, J. U. (2005). "Analytical chemistry detection limits and the evaluation of dredged sediment," ERDC/TN EEDP-04-36, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

NJDEP MOBILE LABORATORY ANALYTICAL RESULTS REPORT

METHOD 524: VERSION 4 UPDATE WITH KETONES

LAB METHOD 524: Measurement Of Purgeable VOCS In Water By Capillary Column GC/MS

Site Name: Stop & Wash
Date Received: 7/8/08
Date Analyzed: 07/ 8/08 21:23
Instrument ID: HP GC/MS Instrument 5973

Field Sample Name: METHOD BLK
Lab Data File Name: 07080857.D
Sample Matrix: Aqueous Dil=1/ 1
GC Column: VOCOL 60m, 0.25mm ID, 1.5um film

#	Compound Name	Concentration ppb	*	*	Ret Time Minutes	Quantitation Response	Quant m/z	Qual m/z	MRL ppb	SMC %Recov
1)	fluorobenzene	20.00		*ISTD	16.51	4.37E+06	96.10	70.10	0.4	
2)	diethyl ether	ND					59.10	45.05	2.0	
3)	acetone	ND					43.00	58.00	20.0	
4)	3-chloro-1-propene	ND					76.00	41.05	20.0	
5)	carbon disulfide	ND					76.00	0.00	20.0	
6)	methyl-t-butyl ether	ND					73.10	57.10	2.0	
7)	acrylonitrile	ND					52.10	53.10	20.0	
8)	2-butanone	ND					43.00	72.00	20.0	
9)	methacrylonitrile	ND					67.10	52.10	20.0	
10)	methyl acrylate	ND					55.10	85.10	20.0	
11)	tetrahydrofuran	ND					71.10	72.10	20.0	
12)	1-chlorobutane	ND					56.10	49.00	20.0	
13)	methylmethacrylate	ND					69.10	99.00	20.0	
14)	2-nitropropane	ND					43.05	45.95	20.0	
15)	methyl isobutyl ketone	ND					43.00	58.00	20.0	
16)	1,1-dichloropropanone	ND					43.00	82.95	20.0	
17)	ethyl methacrylate	ND					69.10	99.10	20.0	
18)	2-hexanone	ND					43.00	58.00	20.0	
19)	4-bromofluorobenzene	19.68		*SMC	30.50	1.49E+06	95.00	173.95	0.4	98.4
20)	1,4-dichloro-2-butene(trans)	ND					53.00	88.00	1.0	
21)	pentachloroethane	ND					116.90	118.90	1.0	
22)	1,4 dichlorobenzene-d4	19.96		*SMC	36.20	1.53E+06	152.05	150.05	0.4	99.8
23)	hexachloroethane	ND					116.9	118.9	1.0	
24)	nitrobenzene	ND					51.1	77.1	20.0	

GC/MS Operator CWL

Mobile Laboratory Manager

* LEGEND:

"J" = <MRL
"ND" = NOT DETECTED
"E" = CONCENTRATION EXCEEDED CALIBRATION RANGE UPPER LIMIT. USE INDIVIDUAL RESULTS FROM DILUTED SAMPLES WHEN AVAILABLE.

"SMC" = SYSTEM MONITORING COMPOUND
"ISTD" = INTERNAL STANDARD
"B" = DETECTED IN BOTH SAMPLE & TRIP BLANK

ATTACHMENT L

August 2008

4-Mile Ground Water Apportionment Withdrawal Table
Former Stop and Wash Property
904-906 South Avenue
Plainfield , New Jersey

4 MILE WATER WITHDRAWAL APPORTIONMENT (JTrp Passaic Formation)

				0 TO 1/4		1/4 TO 1/2		1/2 TO 1		1 TO 2		2 TO 3		3 TO 4	
WATER COMPANY NAME	TOTAL NUMBER OF WELLS	TOTAL POPULATION SERVED	POPULATION PER WELL	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION
Elizabethtown Water DBA NJ American Water	129	609441	4724		0	12	56692	3	14173	3	14173	3	14173	13	61417
Middlesex Water Co.	31	88308	2849		0		0		0	4	11395	17	48427	2	5697
PRIVATE POTABLE WELLS					0		0		0		0		0		0
					0		56692		14173		25568		62600		67114

4 MILE WATER WITHDRAWAL APPORTIONMENT (Qsd Stratified drift)

				0 TO 1/4		1/4 TO 1/2		1/2 TO 1		1 TO 2		2 TO 3		3 TO 4	
WATER COMPANY NAME	TOTAL NUMBER OF WELLS	TOTAL POPULATION SERVED	POPULATION PER WELL	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION	# OF WELLS	POPULATION
Elizabethtown Water DBA NJ American Water	129	609441	4724		0		0		0		0		0		0
Middlesex Water Co.	31	88308	2849		0		0		0	6	17092		0		0
PRIVATE POTABLE WELLS					0		0		0		0		0		0
					0		0		0		17092		0		0

ATTACHMENT M

NEW JERSEY GEOLOGICAL SURVEY

GUIDELINES FOR DELINEATION OF WELL HEAD PROTECTION AREAS IN NEW JERSEY

New Jersey Department of Environmental Protection

M

STATE OF NEW JERSEY
James E. McGreevey, *Governor*

Department of Environmental Protection
Bradley M. Campbell, *Commissioner*

Geological Survey
Karl Muessig, *State Geologist*

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Department of Environmental Protection's mission is to assist the residents of New Jersey in preserving, sustaining, protecting and enhancing the environment to ensure the integration of high environmental quality, public health, and economic vitality.

NEW JERSEY GEOLOGICAL SURVEY

The mission of the New Jersey Geological Survey is to map, research, interpret and provide scientific information regarding the State's geology and ground-water resources. This information supports the regulatory and planning functions of the Department and other governmental agencies and provides the business community and public with the information necessary to address environmental concerns and make economic decisions.

For more information contact:

New Jersey Department of Environmental Protection

New Jersey Geological Survey
P.O. Box 427
Trenton, NJ 08625-0427
(609) 984-6587
http://www.state.nj.us/dep/njgs/

Water Supply Administration
Bureau of Safe Drinking Water
P.O. Box 426
Trenton, NJ 08625-0426
(609) 292-5550
http://www.state.nj.us/dep/watersupply

Cover illustration: An example of a WHPA is shown. The Well Head Protection Area is broken into three tiers; Tier 1, or the 2-year time of travel (TOT), is shown in light gray, Tier 2, or 5-year TOT, is shown in middle gray, and Tier 3, or the 12-year TOT, is shown in dark gray. Ground water movement is from left to right across the picture toward the pumping well near center of Tier 1.

New Jersey Geological Survey

Guidelines For Delineation Of Well Head Protection Areas In New Jersey

Compiled by

Steven E. Spayd and Stephen W. Johnson

New Jersey Department of Environmental Protection
New Jersey Geological Survey
P.O. Box 427
Trenton, New Jersey 08625-0427
2002

Printed on recycled paper

CONVERSION FACTORS

Multiply	By	To obtain
inch	25.4	millimeter
foot	0.3048	meter
mile	1.609	kilometer
gallons per minute	0.06308	liters per second
gallons per minute	192.5	cubic feet per day
gallons per day	0.000694	gallons per minute
foot per day	0.3048	meters per day

"The water that occurs below the surface of the land is invisible and relatively inaccessible and has consequently always possessed an aspect of mystery. What is the mode of its occurrence; what is its quantity; whither does it come; is it stationary or in motion? If in motion, what is its destination and its rate of movement, and what are the forces that propel it through the earth...? These are some of the questions that confront the hydrologists who endeavor to look below the surface. They are questions of almost infinite complexity, involving a great amount of physics and chemistry and almost the whole field of geology."

From Physics of the Earth-IX-Hydrology, page 385, Oscar E. Meinzer, U.S. Geological Survey, 1942.

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GUIDELINES FOR DELINEATION OF WELL HEAD PROTECTION AREAS IN NEW JERSEY

Introduction

Background

The 1986 Federal Safe Drinking Water Act Amendments (Section 1428, P.L. 93-523, 42 USC 300 et. seq.) direct all States to develop a Well Head Protection Program (WHPP) Plan for both public community (CWS) and public non-community (NCWS) water-supply wells. New Jersey's WHPP Plan was approved by the U.S. Environmental Protection Agency (EPA) in December 1991. A goal of the WHPP Plan is to prevent contamination of ground-water resources, which provide drinking water to roughly forty-two percent of New Jersey's population. The delineation of Well Head Protection Areas (WHPA's) is one component of the WHPP. The WHPA is the area from which a well draws its water within a specified time frame. Once delineated, these areas become a priority for efforts to prevent and clean up ground-water contamination. Other components of the WHPP Plan include pollution-source inventories, development and implementation of best management practices to protect ground water, land-use planning, and education to promote public awareness of each person's role in protecting our ground-water resources.

The Safe Drinking Water Act Amendments of 1996 (P.L. 104-182) established the need for each State to have a Source Water Assessment Program (SWAP). In New Jersey, source-water assessment areas for all public supply wells will be established by NJDEP using these WHPA delineation methods.

Public supply wells draw water from underground water sources known as aquifers. Aquifers are geologic units that are porous and permeable enough to hold and allow water to flow through them in quantities sufficient to supply wells. The water contained in these aquifers is called ground water. Ground water moves from points of high pressure (often high elevation) to points of lower pressure such as streams, springs, and pumping wells. When a well is pumping, nearby ground water flows toward it. The longer the well pumps, the greater is the distance from which water will flow through the aquifer to the pumping well. For example, pumping a typical community supply well in New Jersey's coastal plain for two years may draw ground water from 1,500 feet away. If the well continues to pump for twelve years, ground water may be drawn from about a mile upgradient of the well. The time it takes a given particle of ground water to flow to a pumping well is known as the time of travel (TOT). The TOT is directly related to the distance the water has to travel to arrive at the well once it starts pumping. However, for any given TOT, the distance will vary from well to well depending on the rate of pumping and aquifer characteristics such as the transmissivity, porosity, hydraulic gradient, and aquifer thickness. Each WHPA is divided into three sequential tiers based on the TOT component. The tiers are used to assess the relative risk of contamination to the well by placing a higher priority on pollution sources, prevention and remedies in the tiers closest to the wells.

Aquifers are recharged with water from precipitation that percolates through pervious land surfaces and becomes part of the flow of ground water. It is within the WHPA that land uses which introduce pollutants, are most likely to contaminate drinking water sources. Historically, land uses and commercial and industrial facilities and activities have been identified as major sources of ground-water contamination in New Jersey (NJ Water Quality Inventory Report, 1992). These include, but are not limited to: underground storage tanks, septic systems, surface spills, unsecured landfills, leaking drums, above ground storage tanks, road salt piles, and lagoons/surface impoundments.

Once WHPA's are delineated, potential pollution sources may be managed in relation to their location within the WHPA. In addition, protective land uses, such as preserved open space, may be established. In instances where a public supply well has already been contaminated, the WHPA provides investigators with an area in which to search for potential pollution sources and responsible parties.

Under SWAP, the Department has delineated WHPA's for the approximately 2,425 community water supply wells (CWS wells), and will be establishing WHPA's for the roughly 5,000 non-community water water supply wells (NCWS wells) in the near future.

Purpose and Scope

It is the purpose of these guidelines to establish the approved methods for delineation and submission of WHPA's in New Jersey. In accordance with SWAP, the Department will delineate WHPA's for all existing and new CWS and NCWS wells. Based upon their own needs, concerns or requirements for both CWS and NCWS wells, interested parties may perform WHPA delineations at an advanced level as defined later in this guidance.

These guidelines will be used by the Department as well as by outside parties interested in performing delineations. A WHPA delineation may be required as the result of Department regulations, or through a Department-approved remedial investigation or remedial-action work plans. Until such time that regulatory standards for WHPA delineations are established, it is the Department's intent that all public entities require WHPA's to be delineated pursuant to these guidelines.

The focus of this report is to establish the Department's approved methods for conducting delineations, detailing the minimum data requirements, delineation method selection, preferred hydrogeologic parameter and model selection. Use of the prescribed methods will allow interested parties to submit a WHPA delineation for Department review and approval. The report contains requirements for outside parties interested in submitting WHPA delineations to the Department.

Copies of the New Jersey Well Head Protection Program Plan are available from the Division of Watershed Management, P.O. Box 418, Trenton, NJ 08625, or by calling (609) 777-1053, or on the internet at: www.state.nj.us/dep/watersupply/swap.htm.

Delineation Impacts

People in New Jersey who obtain water from public supply wells will benefit by WHPA delineations. The source of their water will ultimately be better protected and preserved through the implementation of the WHPP and the SWAP. The WHPA delineations help the Department achieve several of its strategic goals including clean and plentiful drinking water for all of New Jersey's residents and the resulting reduction in risk to human health that comes with safe drinking water.

Those owning or operating properties containing potential or existing pollutant sources within a designated WHPA will also be affected. The WHPA will provide a clear understanding and justification for the special need of pollutant source control. The source controls instituted in these areas will range from public education to appropriate regulation, depending on the nature of the potential pollutant source, the risk of discharge, and the proximity to the well.

It is hoped that the preventive and voluntary nature of the WHPP and SWAP will encourage cooperative efforts at the county and municipal government levels to protect an essential and shared public resource, the underground water supply. The delineation of WHPA's will help communities understand the nature of their ground-water resources and provide protection for their drinking water supply. Geographic targeting through WHPA delineations enables decision-makers to designate drinking water sources within WHPA's a priority for ground-water protection efforts.

Ground water is vulnerable to contamination and once polluted, it is difficult and costly to clean up. Contaminated ground-water supplies are often abandoned and replaced by more costly surface-water supplies. The value of good-quality ground water can best be understood by comparing its cost with that of treated ground water or an alternative surface-water supply. In many areas, ground water is relatively inexpensive when compared to surface water. The EPA estimated that, in 1991, it cost about one hundred dollars to obtain a million gallons of untreated ground water. In areas of New Jersey where ground-water supplies were replaced with surface water, the cost increased to a thousand dollars or more. The EPA estimated that a switch from untreated ground water to a surface water supply in 1991 would result in a $340 increase per household per year (USEPA, 1991, page 13.). Given New Jersey's reliance on ground water as an integral source of drinking water, the potential annual cost resulting from ground-water contamination is hundreds of millions of dollars.

The costs of remediation or of developing replacement water sources is burdensome and in some cases may be prohibitive for local governments or utilities. Preventing ground-water pollution is clearly the most cost-effective approach to maintaining ground-water resources. The Department's Source Water Assessment Plan (SWAP) emphasizes prevention as the first line of defense to protect New Jersey's ground-water resources. Well head protection is a unique solution that promotes the enlightened self-interest of communities who depend on ground water for their drinking water. The intent is to reduce the potential for contamination by both public and private parties, thereby requiring less treatment and remediation costs.

Public Comment

An earlier draft of this report was published as "Draft Guidance for Well Head Protection Area Delineations in New Jersey" (Spayd, 1998). The draft technical guidance was distributed to interested parties and posted on the Department's SWAP web page. Public comments were solicited at that time and considered in the development of this report.

Acknowledgements

The New Jersey Geological Survey (NJGS) compiled these guidelines with the assistance of the WHP and SWAP Technical Advisory Committees. Special thanks are due to Tom McKee, Bob Kecskes, Terri Romagna and Kim Cenno of the Division of Watershed Management; Judy Louis of the Division of Science, Research and Technology; Barker Hamill, Sandy Krietzman, and Pat Bono of the Bureau of Safe Drinking Water; Robert Nicholson and Eric Vowinkel of the U.S. Geological Survey (USGS); and Karl Muessig, Bob Canace, Jeff Hoffman, Jim Boyle, Laura Nicholson, Bill Mennel, Eric Roman, Ted Pallis, Joe Rich, Walt Marzulli, and Doug Rivedal of NJGS. Former Department employees Dan Van Abs and Emery Coppola also provided significant contributions. Participants in the SWAP Technical Advisory Committee included staff from the Department, EPA, USGS, water purveyors, environmental and watershed associations, as well as local and county health and planning organizations. Participants in the WHP Technical Advisory Committee included staff from:
New Jersey Department of Environmental Protection
Office of Environmental Planning
New Jersey Geological Survey
Bureau of Water Allocation
Bureau of Safe Drinking Water
Division of Science, Research and Technology
Division of Solid Waste Management
Bureau of Operational Ground Water Discharge Permits
Bureau of Underground Storage Tanks
Bureau of Environmental Evaluation and Risk Assessment
New Jersey Department of Agriculture
New Jersey Department of Transportation
New Jersey Pinelands Commission
Delaware River Basin Commission
U.S. Environmental Protection Agency
U.S. Natural Resources Conservation Service
U.S. Geological Survey

General Delineation Requirements

Delineation Tiers

A WHPA will consist of three tiers, each based on a time of travel to the well. The outer boundaries of these tiers will have the following times of travel:

Tier 1 = two years (730 days).
Tier 2 = five years (1,826 days).
Tier 3 = twelve years (4,383 days).

The portion of the zone of contribution designated as the WHPA is based upon the TOT of the ground water to a pumping well. The TOT's are based on the need to assess the relative risk of contamination to the well, allowing priority to sources that pose an imminent threat.

The TOT for the outer boundary of Tier 1 is two years. This TOT is based on findings that bacteria have polluted wells as far as a 170 day TOT from wells, and that viruses have survived in ground water for up to 270 days (Canter, Knox, and Fairchild, 1987; USEPA, 1987). Generally, pollution does not move in a uniform front, so that a TOT represents an average. Significant pollution may reach a well before the average TOT. In addition, once a pollution plume gets too close to a water-supply well, plume containment usually is not feasible without an impact on the yield of the well. The two-year TOT provides a reasonable margin of safety beyond the 170 and 270-day figures.

The boundary for Tier 2 is five years. The Department is not reasonably certain that it can ensure containment of pollution from a known discharge or restoration of the aquifer at TOT's ranging from two to five years. The Department has significantly revised its procedures for pollution case management so that enforcement or public funding of remedies is expedited for cases which threaten or pollute water-supply wells. However, even with implementation of these procedural changes in WHPA's, a lag time between case identification and the initiation of effective remedies still exists. Selection of the five-year TOT was based on the "smearing" effect observed in pollution plumes (caused by adsorption/desorption and the variable rate of pollutant travel through pores), the acceleration of ground water once it comes close to a pumping well, complexity of ground water pollution cases and lag-time estimates for remediation given that approximately 40 percent of all pollution cases must be managed by the Department due to the lack of a cooperating responsible party.

Beyond Tier 2, the Department is reasonably sure that a viable pollution mitigation response is possible for significant, known discharges of pollutants. The purpose of Tier 3, then, is to ensure sufficient monitoring of potential pollution sources so that responses may be made. Theoretically, Tier 3 could extend to the boundaries of the complete zone of contribution. However, the WHP Technical Advisory Committee determined that such an extensive area is not needed in New Jersey. Minor pollutant sources sufficiently distant from it may not pose a significant risk to the well, due to attenuation and dilution. A preliminary analysis of pollution cases in seven counties indicated that a TOT of 10 to 15 years encompasses the full length of most pollution plumes identified (almost all are less than one mile, but many exceed 2,000 feet) (NJDEPE, 1991, page 21.). In addition, a rough analysis of dilution ratios suggests that a 10 to 15 year TOT would provide sufficient dilution and attenuation to minimize the risk of well pollution. It is clear that most sources outside of a TOT of 15 years are either too minor to be of special concern or are major enough to ensure that current Department regulations will protect the water supply. Most significant sources of future discharges, within the zone of contribution but far from the well, will be sufficiently regulated by the Department for Tier 3 and outside of Tier 3. Therefore, a TOT of 12 years was deemed sufficient.

Delineation Methods

A method of WHPA delineation should be selected from and be in accordance with the methods defined in the Approved Delineation Methods section of this report.

WHPA delineation methods, with the exception of the two Calculated Fixed Radius (CFR) methods, should be performed by a qualified ground-water professional.

If a well pumps from more than one aquifer, the WHPA delineation method applicable to the uppermost aquifer will be used with the full pumping rate assigned to the uppermost aquifer.

If a well draws water from a confined aquifer, and the vertical time of travel for ground water moving from the surface downward through the confining unit at the well or for the horizontal time of travel from the edge of the confining unit to the well exceeds 12 years, as determined by the Department, then all three tiers of the WHPA will be established as the 50-foot, owner-controlled zone mandated by Public Water System Construction Regulations (N.J.A.C. 7:10-11.1). For these wells, the land-surface area, where discharges affecting ground water may occur, is beyond Tier 3. The USGS has conducted a study for the Department, which included development of a method to evaluate a well's sensitivity to contamination (Storck, 1997). USGS determined that all wells in glacial and bedrock aquifers in New Jersey should be considered to be drawing water from the land surface within twelve years, unless site-specific data prove otherwise. For wells drawing water from coastal-plain aquifers, USGS determined that the specific location of the well screen and its relation to overlying confining units must be evaluated to determine if water recharging the aquifer reaches the well within 12 years.

A pre-application conference is strongly recommended for all applicants interested in using an advanced delineation method that is not defined in these guidelines. Confirmation or denial of the use of an alternative delineation method will be given by the Department in writing.

Approved Delineation Methods

The selection of appropriate delineation methods involved balancing several factors, for example: WHPP goals, the diverse hydrogeology in the State and the availability of data. Through the work of the WHP Technical Advisory Committee (comprised of technical experts from state and federal government), methods were identified and assessed that would define the zone of contribution of the well. Pursuant to A-5015, approved by the Legislature in its 1991 session, the Department will delineate WHPA's for all CWS wells. The WHP Technical Advisory Committee recognized at the beginning of the delineation discussion that it would not be possible, due to cost and staff constraints, to collect site-specific well and aquifer parameter data for each of the approximately 2,425 CWS wells in the State. It was determined that existing data including regional attributes would be used for Department WHPA delineations. The Department will perform its delineations under SWAP/WHPP within the Safe Drinking Water Permitting Program using, at a minimum, the combined model/CFR method on all existing CWS wells and on all new CWS wells. Where adequate hydrogeologic studies and models exist, and Department resources allow, the Department may perform advanced delineation(s).

The delineation method used for a well is dependent on the type of well, hydrogeologic setting for that well, and the availability and reliability of data. The hydrogeologic situation depends on the geology of the aquifer, and the presence of well interference effects, hydrologic boundaries, aquifer heterogeneities, and aquifer anisotropy. This section of the report identifies the acceptable methods with a differentiation made between CWS and NCWS wells.

The Federal mandates for the WHPP and SWAP require that States include NCWS wells in their program plan. In general, fewer well and aquifer parameters are available for NCWS wells due to the nature of the population they serve and a historical lack of reporting requirements. For these reasons, and time, and economic constraints, the Department will delineate WHPA's for all NCWS wells using the CFR Calculation Method. In recognition of the need to minimize the pollution risk to these wells, while considering the limited hydrogeologic expertise that may be available to the well owners to perform their own WHPA delineations, a matrix was developed from which a generic CFR could be determined (Table 1). This matrix was developed using ranges of pumping rates and aquifer thickness as well as an estimated effective porosity. The values in the matrix represent standard values rounded to the nearest ten feet.

Delineation Method Selection

The CFR matrix method is an acceptable method only for NCWS wells whose pumping rate does not exceed 70 gallons per minute.

The CFR calculation method is an acceptable method for NCWS wells at this time. This method will also be used for the CFR portion of any WHPA using the combined model/CFR method. In the future as resources permit, NCWS wells pumping 70 GPM or greater may be delineated by combined model/CFR method.

The combined model/CFR method is an acceptable method for all public water-supply wells. This is the minimum acceptable method for public community water system wells (CWS).

The non-CFR model method, the three-dimensional model method, and advanced delineation model are acceptable methods for all public water-supply wells located in areas that have a detailed local and regional water table mapping available, and sufficient accurate data on aquifer recharge, well interference, hydrologic boundaries, aquifer heterogeneities, and aquifer anisotropy.

CFR Matrix Method

The CFR matrix method uses predetermined values given in table 1. The procedure to delineate a WHPA using this method will be as follows:

1. Select table 1a or 1b depending on the type of aquifer from which the well pumps:

a. Table 1a will be used for unconsolidated glacial and coastal-plain aquifers consisting of sand and gravel.

b. Table 1b will be used for all bedrock aquifers including those consisting of sandstone, conglomerate, shale, limestone, dolomite, granite, gneiss, diabase, and other sedimentary, igneous or metamorphic rocks.

2. Find the Tier 1 portion of the selected table, and in the left column of the table find the row with the range that includes the well's pumping rate.

3. In the top row of the table, find the column with the range that includes the well's aquifer thickness.

4. Select the Tier 1 CFR from where the pumping rate row and aquifer thickness column intersects.

5. Repeat paragraphs 2 through 4 above, for Tier 2 and Tier 3.

6. The CFR value for each tier will be used to define the radius of a circle, which will be centered on the well to complete the WHPA delineation. A map of the WHPA delineation, including all three tiers, will be drawn according to the delineation mapping requirements section.

CFR Calculation Method

The CFR calculation method will be used to generate the CFR values by using the following formula:

$$CFR = \sqrt{\frac{61.3Qt}{n_e b}}$$

where:

CFR = Calculated fixed radius in feet
Q = Pumping rate in gallons per minute
t = Time of travel in days (that is, 730, 1,826, or 4,383 days)
61.3 = Conversion factor [(1440 min/day)/(7.48 gal/cu ft)]/3.14
n_e = Effective porosity
b = Aquifer thickness in feet

This method requires the pumping rate, time of travel, effective porosity, and aquifer thickness, which must be selected in accordance with the Data Selection and Parameter Estimation section of this report. The calculation will be made for the appropriate time of travel for each tier. The CFR value for each tier will be used to define the radius of a circle, which will be centered on the well to complete the WHPA delineation. This method is conservative because it does not include recharge in the calculation. However, this was determined to be appropriate as the larger size of the CFR offsets inaccuracies due to the lack of site-specific data and use of the lowest level of delineation. A map of the WHPA delineation, including all three tiers, will be drawn according to the delineation mapping requirements section.

Table 1a. Calculated fixed radius in feet. Unconsolidated Glacial and Coastal Plain aquifers consisting of sand and gravel; effective porosity = 25%.

Pumping Rate (gpm)	Tier 1, two year time of travel Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	190	110	80	60	50	40
11-20	330	190	130	100	90	80
21-30	420	240	170	130	110	100
31-40	500	290	200	160	130	120
41-50	570	330	230	180	150	130
51-60	630	360	260	200	170	150
61-70	680	390	280	220	180	160
Pumping Rate (gpm)	Tier 2, five year time of travel Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	300	170	120	90	80	70
11-20	520	300	210	160	140	120
21-30	670	390	270	210	180	160
31-40	790	460	320	250	210	190
41-50	900	520	370	280	240	210
51-60	990	570	410	310	270	230
61-70	1080	620	440	340	290	250
Pumping Rate (gpm)	Tier 3, twelve year time of travel Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	460	270	190	150	120	110
11-20	800	460	330	250	210	190
21-30	1040	600	420	330	280	240
31-40	1230	710	500	390	330	290
41-50	1390	800	570	440	370	330
51-60	1540	890	630	490	410	360
61-70	1670	960	680	530	450	390

Table 1b. Calculated fixed radius matrix in feet for bedrock aquifers consisting of sandstone, conglomerate, shale, limestone, dolomite, granite, gniess, diabase, and other sedimentary, igneous and metamorphic rocks; effective porosity = 2%.

Tier 1, two year time of travel						
Pumping Rate (gpm)	Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	670	390	270	210	180	160
11-20	1160	670	470	370	310	270
21-30	1500	860	610	470	400	350
31-40	1770	1020	720	560	470	420
41-50	2010	1160	820	630	540	470
51-60	2220	1280	910	700	590	520
61-70	2410	1390	980	760	640	570
Tier 2, five year time of travel						
Pumping Rate (gpm)	Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	1060	610	430	330	280	250
11-20	1830	1060	750	580	490	430
21-30	2370	1370	970	750	630	560
31-40	2800	1620	1140	890	750	660
41-50	3170	1830	1300	1000	850	750
51-60	3510	2030	1430	1110	940	830
61-70	3810	2200	1560	1210	1020	900
Tier 3, twelve year time of travel						
Pumping Rate (gpm)	Aquifer Thickness (feet)					
	1-50	51-100	101-200	201-300	301-400	401-500
<1-10	1640	950	670	520	440	390
11-20	2840	1640	1160	900	760	670
21-30	3670	2120	1500	1160	980	860
31-40	4340	2500	1770	1370	1160	1020
41-50	4920	2840	2010	1560	1310	1160
51-60	5440	3140	2220	1720	1450	1280
61-70	5910	3410	2410	1870	1580	1390

Combined Model/CFR Method

The combined model/CFR method was chosen as the minimum method for CWS wells, and will be used by the Department for WHPA delineations for CWS wells. This method was chosen based upon the Department's need to provide a low cost, relatively accurate estimate of the WHPA using available data on the characteristics of the well (pumping rate and depth) and the regional characteristics of the aquifer (hydraulic gradient direction and magnitude, transmissivity, anisotropy, effective porosity, thickness, and hydrologic boundaries) using the best available data.

The combined model/CFR method combines the CFR calculation method defined above with a two-dimensional ground-water flow model that properly accounts for hydraulic gradient, aquifer transmissivity, effective porosity, aquifer saturated thickness, aquifer anisotropy, pumping rate of the well, and time of travel.

The following steps will be taken:

1. The CFR for Tier 1 and Tier 2 will be calculated as described in the CFR calculation method. No CFR for Tier 3 is used in this method.

2. Determine the regional hydraulic gradient (see **page 16**).

    a. The hydraulic gradient magnitude and direction will be calculated from a regional water-table map, when available, over a distance from the well to one-mile upgradient of the well.

    b. When no satisfactory regional water table map is available, the hydraulic gradient magnitude may be estimated by multiplying the topographic gradient, calculated over a distance from the well to one-mile upgradient of the well, by 0.5. In some aquifers, especially bedrock aquifers, a reasonable estimate of the regional hydraulic gradient may not be possible. In these cases, the gradient may be set to zero.

3. Determine aquifer anisotropy. For some aquifers, a reasonable estimate of anisotropy may not be possible. In these cases the anisotropy ratio should be set to 1:1. (table 2.)

4. The ground-water flow model will be used to calculate the zone of contribution of the well for the times of travel established for Tier 1, Tier 2, and Tier 3.

5. The long axis of the calculated zone of contribution will be aligned with the regional ground-water flow direction as shown in figure 1.

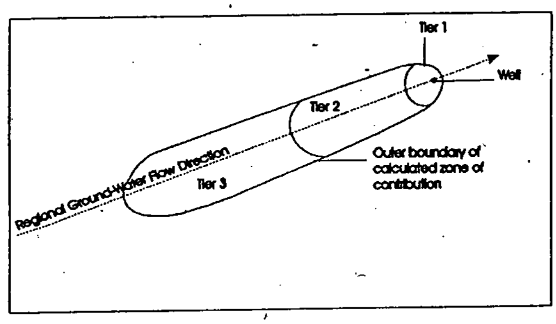

Figure 1 : Long axis of zone of contribution is aligned in the direction of the regional ground-water flow direction

6. A 20-degree angle of rotation, or an angle of rotation determined from site-specific data, will be applied to the model results. The results will be rotated, using the well as the pivot point, by the angle of rotation both clockwise and counter-clockwise, for each tier as shown in figure 2. For a discussion of "angle of rotation", see hydraulic gradient in the Data Selection and Parameter Estimation section of this report.

7. The CFR portion of the WHPA will be superimposed on the results of the ground-water model portion of the WHPA as shown in figure 3. The CFR component was added to account for potential inaccuracies in estimating well characteristics and properties of the aquifer, as well as to account for potential pumping interference effects which are common at public water systems in New Jersey.

8. The resulting outer boundary of the combined CFR and ground-water model portions will then be established for each tier as shown in figure 4.

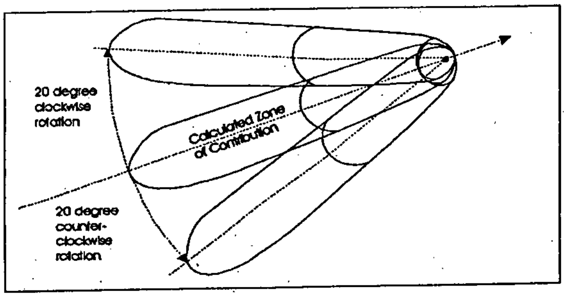

Figure 2. Clockwise and counter-clockwise 20 degree angle of rotation applied to calculated zone of contribution using the well as the pivot point.

9. The outer boundary of the WHPA delineation may be truncated by appropriate hydrologic boundaries such as major rivers and aquifer boundaries. The resulting boundary will be the WHPA delineation for the well, which will be drawn according to the delineation mapping requirements section.

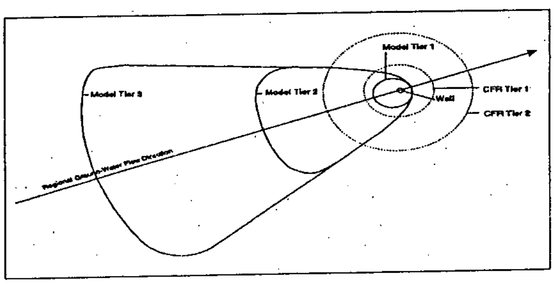

Figure 3. CFR portion of WHPA superimposed on the results of the ground-water model portion of the WHPA.

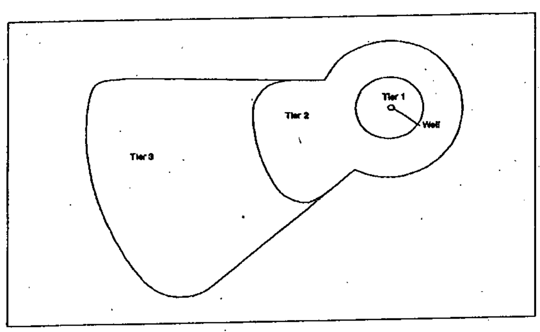

Figure 4. Resulting outer boundary of the combined CFR and model portions established for each tier of the WHPA delineation.

An example of the type of model the Department and others may use as part of this method is the RESSQC portion of the EPA WHPA Model, defined in the publication, "WHPA: A Modular Semi-Analytical Model for the Delineation of Well Head Protection Areas, March 1991." The model is available through the International Ground Water Modeling Center, Colorado School of Mines, Golden, Colorado, 80401-1887. The appropriate well pumping rate and aquifer values for saturated thickness, hydraulic conductivity, hydraulic gradient and magnitude, and effective porosity are critical to perform the model. Site-specific data, especially for hydraulic gradient, increase the level of model accuracy. Selection of these values is discussed in the Data Selection and Parameter Estimation section.

The NJGS has developed a computer program called "OUTPATH" that will apply the angle of rotation and aquifer anisotropy to outputs from the RESSQC version of the EPA WHPA model and create a file of the WHPA that can be incorporated into a geographic information system (GIS). It is available upon request from NJGS.

Non-CFR Model Method

When a regional water table map is available and aquifer recharge and well interference are accounted for in the model, no CFR is needed for the WHPA delineation. The non-CFR model method will use a two-dimensional ground-water flow model that properly accounts for hydraulic-head distribution, aquifer recharge, well interference, aquifer transmissivity, effective porosity, aquifer saturated thickness, pumping rate of the well, time of travel, aquifer anisotropy, hydrologic boundaries, and aquifer heterogeneities.

The following steps will be taken:

1. For advanced delineations requiring a model grid, the grid cells should be sized to allow accurate locations of pumping wells and the resulting ground-water flow paths. Grid cells containing pumping wells should be no greater than 100 feet in length or width. The maximum allowable length or width of a grid cell in any such model will be 500 feet. The maximum allowable thickness of any layer in the model will be 100 feet. The model should be subject to a sensitivity analysis, and be calibrated, in a manner acceptable to the Department, so that simulated results are acceptably close to field conditions.

2. The ground-water flow model will be used to calculate the zone of contribution of the well for the times of travel established for Tier 1, Tier 2, and Tier 3 as shown in figure 5.

3. A 20-degree angle of rotation, or an angle of rotation determined from site-specific data, will be applied to the model results. The results will be rotated , using the well as the pivot point, by the angle of rotation of rotation both clockwise and counter-clockwise, for each tier as shown in figure 6.

4. The outer boundary of the WHPA delineation may be truncated by appropriate hydrologic boundaries if warranted. The resulting outer boundary of the rotated tiers will then be established as shown in figure 7. This will be the WHPA delineation for the well, which will be drawn according to the delineation mapping requirements section.

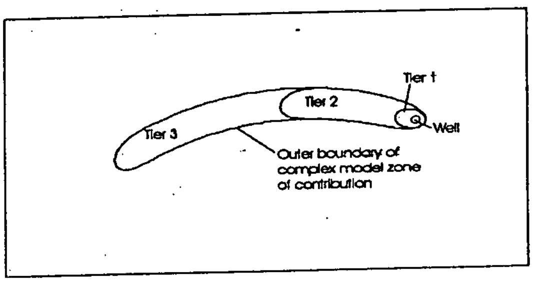

Figure 5. Non-CFR model method zone of contribution example.

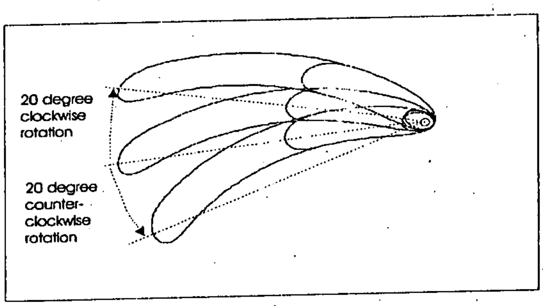

Figure 6. Clockwise and counter-clockwise 20-degree angle of rotation applied to non-CFR model method of contribution using the well as the pivot point.

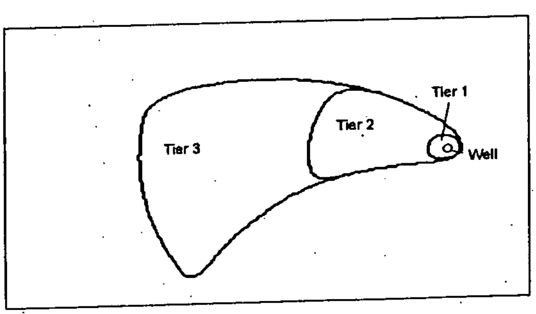

Figure 7. Outer boundaries of the rotated tiers are established as the WHPA delineation.

Three-Dimensional Model Method

The three-dimensional model method will use a three-dimensional, numerical ground-water flow model that properly accounts for hydraulic-head distribution, aquifer transmissivity, effective porosity, aquifer saturated thickness, pumping rate of the well, time of travel, partial penetration of the aquifer by the pumping well, well interference, hydrologic boundaries, aquifer recharge, aquifer heterogeneities, aquifer anisotropy, and any other relevant site-specific conditions, as appropriate for the area surrounding the well.

The following steps will be taken:

1. For advanced delineations requiring a model grid, the grid cells should be sized to allow accurate locations of pumping wells and the resulting ground-water flow paths. Grid cells containing pumping wells should be no greater than 100 feet in length or width. The maximum allowable length or width of a grid cell in any such model will be 500 feet. The maximum allowable thickness of any layer in the model will be 100 feet. A sensitivity analysis and calibration should be performed on the model, in a manner acceptable to the Department, so that simulated results are acceptably close to field conditions.

2. The ground-water flow model will be used to calculate the zone of contribution of the well for the times of travel established for Tier 1, Tier 2, and Tier 3 as shown in figure 5.

3. A 20-degree angle of rotation, or an angle of rotation determined from site-specific data, will be applied to the model results. The results will be rotated, using the well as the pivot point, by the angle of rotation both clockwise and counter-clockwise, for each tier as shown in figure 6. When using the three-dimensional model method, the rotated area should be truncated by appropriate hydrologic boundaries.

4. The resulting outer boundary of the rotated tiers will then be established as shown in figure 7. This will be the WHPA delineation for the well, which will be drawn according to the delineation mapping requirements section.

5. As an alternative to incorporating an angle of rotation when using the three-dimensional model method, a systematic evaluation of the model sensitivity to different combinations of model parameters, over appropriate ranges, may be conducted. This should include seasonal and spatial variation of appropriate model-input parameters. This

will require delineating a WHPA for each acceptable combination. The outer limits of the resulting individual tier delineations will constitute the WHPA, which will be drawn according to the Delineation Mapping Requirements section.

Advanced Delineations and WHPA Revisions

The delineation methods in this report reflect a hierarchy of increasing degree of modeling sophistication and increasing data requirements for the model used to delineate the WHPA. The principle behind this delineation hierarchy is to achieve an increasing degree of accuracy for the WHPA to the degree that methods and available data allow improved simulation of real hydrologic conditions.

The concept of performing advanced delineations is based on two principles. First, where data are available, an advanced delineation will likely provide a WHPA that is more accurate. Secondly, it is conceivable that an interested party, such as a water purveyor or a regulated potential or existing pollutant source, may wish to perform an advanced delineation to provide certainty regarding the application of a WHPA to a specific geographic location. Situations such as a well that receives a portion of its water from a nearby river that has good hydraulic connection to the aquifer, or a well field that is affected by well interference are also good candidates for an advanced delineation.

Because the Department will be performing WHPA delineations on all public water system wells, only delineations submitted by outside parties, which are completed at a level higher than that undertaken by the Department will be reviewed.

Interested parties who feel that a more advanced delineation for a NCWS well is required, and volunteer to perform a WHPA delineation, will use the same methods used for CWS well delineations.

The three-dimensional model method, which uses a numerical model, is the highest level of WHPA methods described in this report because it has the potential to incorporate and evaluate all components of the ground-water system around the pumping well. The Department does not necessarily consider numerical modeling superior to all other techniques for all applications. Numerical modeling is costly and data intensive. It may not automatically result in delineations that are measurably superior to less rigorous and less time-intensive analytical and semi-analytical methods, but, when done properly with good site-specific data, it may provide significant insights into the location of the WHPA.

For public water-supply wells with an existing WHPA delineation completed by the Department, the method selected for a revised delineation should meet the following requirements:

1. The method should be selected from the methods defined in this report and meet the selection requirements listed in the Delineation Method Selection section; and

2. The method should be a more advanced method than that used for the delineation of the existing WHPA, or must be an equivalent method used with more reliable site-specific data, as determined by the Department.

3. For advanced delineations requiring a model grid, the grid cells must be sized to allow accurate locations of pumping wells and the resulting ground-water flow paths. Grid cells containing pumping wells must be no greater than 100 feet in length or width. The maximum allowable length or width of a cell in any such model will be 500 feet. The maximum allowable thickness of any layer in the model will be 100 feet.

The Department intends to rely upon the American Society for Testing and Materials (ASTM) ground-water modeling standards listed in the resource section of this report. Ground-water professionals submitting WHPA's should follow these standards.

Data Selection and Parameter Estimation

The selection of values for hydraulic gradient, aquifer transmissivity, effective porosity, aquifer saturated thickness, pumping rate, well radius and anisotropy for all delineations must be in accordance with the order specified in table 2. For all WHPA methods, each variable listed in table 2 should be selected, when feasible, based on the first selection procedure given in table 2. If the data for the first selection are not available, the second selection should be used. If the data for the second selection are not available, the third selection should be used. Where values can not be determined from table 2 it may be obtained from the NJGS, from a published source, or other source acceptable to the Department.

Hydraulic Gradient

Hydraulic gradient has two components: magnitude and direction. The magnitude is measured as the slope of the water table, representing the change in elevation of the water table over a unit distance. The direction of the hydraulic gradient, often referred to as the "angle of ambient flow," is the azimuth of the maximum slope of the water table at a specific point.

The hydraulic gradient varies over space and time, and is affected by a variety of local and regional factors. For WHPA delineation purposes, the regional hydraulic gradient is the most useful.

For some delineation methods, the hydraulic gradient magnitude and direction will be calculated from a regional water-table map in the area upgradient of the well over a distance of one mile. The distance of one mile was selected as representative of a "regional" gradient, and is reasonable when compared to the calculated lengths of typical WHPA's representing hydrogeologic and operational conditions found in New Jersey.

In instances where it is difficult to calculate the hydraulic gradient within a one-mile span due to rapid changes in the water-table gradient or direction, or due to the location of hydrologic boundaries, the gradient magnitude and direction will be calculated over an appropriate distance of less than one mile.

In areas of the State where regional water-table maps do not exist, the magnitude and direction of the regional hydraulic gradient may be approximated based on topography, in the area upgradient of the well. This is determined by using the change in land surface elevation over a distance of one mile in the aquifer from which the well is pumping. This approach recognizes that the water table is usually a subdued replica of topography.

To quantify the relationship between topography and the water table, the NJGS observed topographic and hydraulic gradients in three drainage basins in the New Jersey Coastal Plain - the Great Egg Harbor, Mullica, and Toms River Basins. Topographic and hydraulic gradients for selected intervals were compared for 128 line segments each approximately one mile in length. A statistical analysis of these data suggested that a reasonable estimate of the hydraulic gradient in the Coastal Plain could be obtained by multiplying the topographic gradient by 0.5. Thus, a conversion factor of 0.5 will be used to convert a known topographic gradient, over a distance of one mile in the area upgradient of the well, to the hydraulic gradient magnitude, when lacking a regional water-table map. Research will continue to better define this relationship in other hydrogeologic regions of the State.

The hydraulic gradient direction or angle of ambient flow, is a very important parameter for a WHPA delineation. In certain hydrogeologic settings, especially those with a relatively steep hydraulic gradient, small errors in selection of the angle of ambient flow may cause the WHPA to be partially mislocated resulting in areas that are actually contributing water to the well to end up outside the WHPA. This would result in a misconception of the actual sources of water for a well.

Variability and uncertainty in the direction of ambient ground-water flow may arise from several factors, including:

- No regional water-table map is available and the angle of ambient flow is based on an estimation from the topography of the land surface.
- The regional water-table map used is based on a limited number of simultaneous water-level measurements or the observation points are separated by large distances.
- Subjectivity in interpreting field data to construct a water-table map results in non-unique water-level contours.
- Subjectivity in estimating direction of hydraulic gradient from water-table maps.
- Temporal variations in the angle of ambient flow exist as a result of spatial or seasonal differences.

Table 2. Selection of input values for WHPA delineation.

DELINEATION DATA VARIABLES	FIRST SELECTION	SECOND SELECTION	THIRD SELECTION
Hydraulic Gradient	Calculated from regional water-table contour map in area up-gradient of the well, with gradient magnitude and direction calculated over distance of one mile (1). Delineation to include angle of rotation calculated from site-specific data.	Calculated from regional water-table contour map in area up-gradient of the well, with gradient magnitude and direction calculated over distance of one mile (1). Delineation to include +/-20 degree angle of rotation.	Gradient magnitude and direction based on topographic gradient and 0.5 conversion factor, in area up-gradient of the well (1). Delineation to include +/-20 degree angle of rotation.
Aquifer Transmissivity	Adequate hydrologic tests from wells located within the modeled area (2).	Calculated as the product of hydraulic conductivity and aquifer thickness (3).	Estimated based on published values for comparable aquifers.
Effective Porosity	Adequate hydrologic tests from wells located within the modeled area (2).	Estimated based on total porosity and/or specific yield data from the aquifer.	Obtained from effective porosity values provided for selective aquifer types in table 1.
Aquifer Saturated Thickness	**For unconsolidated aquifers**, the vertical distance between the water table and the first significant confining layer underlying the aquifer in which the well is screened. **For bedrock aquifers**, the vertical distance between the water table and the bottom of the well, but no greater than 500 feet.	**For unconsolidated aquifers**, the vertical distance between the water table and the bottom of the well. **For bedrock aquifers**, the length of open borehole for the well, but not greater than 500 feet.	**For unconsolidated aquifers**, the average or median aquifer thickness for wells in this aquifer. **For bedrock aquifers**, the average or median aquifer thickness for wells in this aquifer.
Pumping Rate	For wells in production for at least two years, use the method below: Maximum average annual pumping rate during the period of operation, up to and including the previous 12 years, from actual pumping data, plus a 25% safety factor, but not more than the pump capacity and not less than 40% of pump capacity.	Estimated based on the method below yielding the lowest pumping rate: Installed pump capacity for the well. Water allocation for the individual well, if available. The planned maximum average annual pumping rate, over the next 12 years, if justified by the well owner to the satisfaction of the Department.	Estimated based on the number of connections serviced by the well, or the estimated population serviced by the well, with per-capita consumption at 100 gallons per day per capita, and occupancy based on census data for the specific municipality where the well is located. If the number of connections or the estimated population is not known, the average or median pumping rate for this type of well will be used.
Well Radius	One half the finished diameter of the well screen or open borehole listed on the well record.	One half the finished diameter of the well screen or open borehole listed on well construction diagram.	If unknown, use the radius corresponding to the well's pump capacity rate listed in Driscoll, 1986., Table 13.1, Ground Water and Wells, second edition.
Anisotropy (Ratio) and Direction	Value based on adequate hydrogeologic tests and analyses of wells within modeled area.	Value based on published values for the aquifer.	1:1 for all aquifers except the following: Mesozoic sedimentary rocks 10:1; Paleozoic sedimentary rocks 3:1. Direction is bedding plane strike from a published geologic map.

For all WHPA methods, the first selection must be used if the data are available; if not available, the second selection must be used; and so on.
When site-specific values can not be determined from table it may be requested from the New Jersey Geological Survey, P.O. Box 427, Trenton, NJ 08625, or obtained from a published source or other source acceptable to the Department.
If it is difficult to calculate the hydraulic gradient over a distance of one mile, due to rapid changes in the water-table gradient or direction, or due to the location of hydrologic boundaries, then the hydraulic gradient magnitude and direction should be calculated over an appropriate distance less than one mile.
Tests must be adequate to permit accurate definition of hydrologic characteristics of the aquifer to the satisfaction of the Department.
When calculating transmissivity, the hydraulic conductivity should generally be the geometric mean value for the aquifer as shown in table 3.

in ground-water recharge or unidentified pumping nearby.

Temporal variations in the direction of ground-water flow can be quantified at locations with sufficient regional water-level monitoring data. Such changes have been documented in published reports and have been identified as a primary cause of transverse dispersion of contaminant plumes.

To quantify expected temporal variation in hydraulic gradient directions in New Jersey aquifers, the NJGS evaluated eight sites in New Jersey with sufficient water-level monitoring data. The selected sites covered a variety of New Jersey aquifers, including coastal plain, bedrock and glacial aquifers. Mean hydraulic gradient directions and seasonal variations from the mean were calculated for numerous sampling points. A statistical analysis of the data showed that the total variation in the azimuth of the flow direction was as much as 48 degrees (24 degrees on either side of the mean) over a two year period. Based on this analysis, a 16.4-degree range on either side of the mean hydraulic gradient direction would sufficiently account for the variability resulting from temporal variation in hydraulic gradient direction at 90% of the sites.

To account for the variability in the accuracy of the selected angle of ambient flow, arising from both temporal variation and the other potential uncertainties listed above, a range of 20 degrees on either side of the selected angle of ambient flow will be used in delineating WHPA's. The variability associated with the angle of ambient flow will be factored into the WHPA delineation process by rotating the delineated WHPA, with the well as the pivot point, 20 degrees in both a clockwise and counter-clockwise direction. The total rotation will be 40 degrees. The entire area encompassed by the rotation is included in the WHPA. However, the rotated area should be truncated by appropriate hydrologic boundaries when such data are available. This 20-degree "angle of rotation" will be used for all WHPA delineations unless sufficient site-specific data justify the use of a smaller or larger angle of rotation or if the three-dimensional model method is used with the alternative described in item 5 of the Three-Dimensional Model Method section (page 12). The angle can be changed if sufficient evidence, covering the seasonal fluctuation phenomena, is presented as part of the delineation.

Calculation of a site-specific angle of rotation requires a network of observation wells acceptable to the Department, with a minimum of one year of quarterly water-level data, water-table maps, and calculated hydraulic gradient directions. The calculated site-specific angle of rotation will be equal to the total variation in the azimuth of ground-water flow directions observed in the data.

The NJGS has developed a computer program called "OUTPATH" that will apply the angle of rotation to outputs from the RESSQC version of the EPA WHPA model and create a file of the WHPA that can be incorporated into a geographic information system (GIS). It is available upon request from NJGS.

Transmissivity

Transmissivity is a measure of the quantity of water that an aquifer can transmit over its saturated thickness per unit width (that is, one foot) and a hydraulic gradient of one. In mathematical terms, transmissivity is equal to the product of the thickness and hydraulic conductivity of the aquifer.

For WHPA calculation, the aquifer's transmissivity will be selected based on adequate hydrologic tests from wells located within the modeled area. In areas where transmissivity values are not readily available, transmissivity should generally be obtained by multiplying the aquifer thickness by the geometric mean of hydraulic conductivity values measured in the aquifer of interest. Currently available hydraulic conductivity and transmissivity values for New Jersey aquifers are listed in tables 3 and 4. Where no data for a given formation or aquifer are available in tables 3 and 4, published values for similar aquifers may be used.

Effective Porosity

Porosity is important in ground-water hydrology because it tells us the maximum amount of water that an aquifer can contain when it is saturated. Porosity is the ratio of the volume of void spaces (that is, pores, or the space not occupied by solid matter) to the total volume of an aquifer. Porosity is expressed as a decimal fraction or as a percentage, such as 0.25 or 25%. Porosity in unconsolidated sand and gravel aquifers is derived from the spaces between grains. Porosity in consolidated bedrock aquifers (limestone, marble, shale, sandstone, granite and gneiss for example) is largely derived from fractures such as joints, faults, and other tabular openings along bedding planes. Only a part of this water is available to supply a well. A portion of an aquifer's overall porosity will not release or transmit water, due to the water being held in some pores by capillary tension, or because of dead-end pore space which does not transmit water to a well. This portion or percentage of pore space is called specific retention, because water is retained there and not released. Some clays have high specific retention (up to 48%), while sand, gravel and consolidated rock have low specific retention (ranging from less than 1% in solid rock to 3% in sand) (Heath, 1983). The portion of porosity that drains or transmits water under influence of gravity or due to pumping a well is called effective porosity. This is the percentage of the aquifer's pore space or storage available to supply a pumping well. Effective porosity is largest for sand and gravel (around 25%) and usually lowest for clay, silt, and bedrock (around 2%).

Of all the parameters necessary for delineating WHPA's, porosity and effective porosity is the most difficult to measure and quantify. The preferred method for quantifying effective porosity requires hydrologic tests at the well site, including pumping tests, material analysis, and tracer testing. For example, the effective porosity may be calculated based on its relationship with hydraulic conductivity (K), hydraulic gradient (i), and ground water velocity (v), in accordance with Darcy's Law, such that:

$$(n_e) = [K * i] / v$$

At present, there are few published values of effective porosity for aquifers in New Jersey. Ongoing research being conducted by the USGS and the NJGS should begin to fill this data gap. When detailed site-specific data or detailed aquifer specific data of porosity are not available, an effective porosity value will be obtained from the values provided in table 1 of this report. The values in table 1 were determined based on review of worldwide values of effective porosity from published sources including ground-water tracer tests conducted in the field and laboratory tests of aquifer materials. Effective porosity values for unconsolidated aquifers such as glacial stratified drift, and coastal plain aquifers, have been estimated to be 25% (table 1a). Effective porosity values for the rock aquifers of New Jersey, such as those in shale, limestone, sandstone, gneiss and granite, have been estimated to be 2% (table 1b). Due to the current lack of site-specific data, in developing WHPA's for public supply wells, NJGS exclusively used the effective porosity values in table 1a. and b..

Table 3. Summary of horizontal conductivity (k) values for geologic and hydrogeologic units in New Jersey as of January 2002.

Geologic Unit	Number of tests	Arithmetic mean (ft²/d)	Minimum (ft²/d)	Maximum (ft²/d)	Median (ft²/d)	Standard deviation
Outwash deposits	1	177.00	177.00	177.00		
Deltaic sediment	1	59.00	59.00	59.00		
Fluvial over lacustrine sediment	1	110.00	110.00	110.00		
Till (Quaternary)	1	32.00	32.00	32.00		
Till (late Wisconsinan)	1	142.90	142.90	142.90		
Stratified drift	5	158.20	55.00	215.00	188.00	65.73
Glaciolacustrine sand and gravel	1	267.00	267.00	267.00		
Glaciolacustrine sand and gravel (late Wisconsinan)	1	285.00	285.00	285.00		
Glaciolacustrine sand and gravel (Illinoian)	1	28.00	28.00	28.00		
Cohansey Formation	11	125.25	52.00	216.00	116.70	55.73
Cohansey & Kirkwood Formations	5	152.20	98.00	200.00	160.00	48.07
Kirkwood Formation - lower member (sand facies)	5	110.60	22.00	334.00	57.00	126.86
Kirkwood Formation	4	179.00	80.00	365.00	135.50	127.63
Shark River Formation - Toms River member	1	32.00	32.00	32.00		
Mount Laurel Formation	1	41.00	41.00	41.00		
Mount Laurel and Wenonah Formations	3	12.17	7.00	20.50	9.00	7.29
Magothy, Raritan, and Potomac Formations	1	13.00	13.00	13.00		
Magothy Formation	6	119.85	19.00	314.00	66.90	116.73
Raritan Formation	2	72.90	71.60	74.20	72.90	1.84
Potomac Formation	1	49.00	49.00	49.00		
Potomac Formation, Unit 3 (upper subsurface)	1	153.00	153.00	153.00		
Brunswick Group (Passaic Formation through Boonton Formation)	1	0.54	0.54	0.54		
Towaco Formation	1	5.00	5.00	5.00		
Passaic Formation	1	2.51	2.51	2.51		
Leithsville Formation	1	21.00	21.00	21.00		
Leithsville Formation and Hardyston quartzite, undivided	1	13.50	13.50	13.50		
late Proterozoic rocks, undifferentiated	1	0.05	0.05	0.05		
Hornblende granite	1	0.51	0.51	0.51		
Pyroxene granite	1	0.58	0.58	0.58		
Hydrogeologic unit	**Number of tests**	**Arithmetic mean (ft²/d)**	**Minimum (ft²/d)**	**Maximum (ft²/d)**	**Median (ft²/d)**	**Standard deviation**
continous or discontinous till	2	87.45	32.00	142.90	87.45	78.42
glacial sand and gravel	11	156.09	28.00	285.00	177.00	86.38
Cohansey aquifer	1	216.00	216.00	216.00		
Kirkwood-Cohansey water-table aquifer system	16	129.80	52.00	200.00	133.89	49.12
Rio Grande water-bearing zone	3	187.33	80.00	365.00	117.00	154.97
Atlantic City "800-foot" sand aquifer	5	110.60	22.00	334.00	57.00	126.86
Piney Point aquifer	1	32.00	32.00	32.00		
Mount Laurel-Wenonah aquifer	4	19.38	7.00	41.00	14.75	15.60
Potomac-Raritan-Magothy aquifer system	1	13.00	13.00	13.00		
upper Potomac-Raritan-Magothy aquifer	6	119.85	19.00	314.00	66.90	116.73
middle Potomac-Raritan-Magothy aquifer	2	72.90	71.60	74.20	72.90	1.84
lower Potomac-Raritan-Magothy aquifer	2	101.00	49.00	153.00	101.00	73.54
Brunswick aquifer	3	2.68	0.54	5.00	2.51	2.24
Jacksonburg limestone, Kittatinny Supergroup and Hardyston quartzite	2	17.25	13.50	21.00	17.25	5.30
igneous and metamorphic rocks	3	0.38	0.05	0.58	0.51	0.29

Not all aquifers in New Jersey are represented on this table, because some have not been tested or analyzed.

Table 4. Summary of transmissivity values for geologic and hydrogeologic units in New Jersey as of January 2002.

Geologic Unit	Number of tests	Arithmetic mean (ft²/d)	Minimum (ft²/d)	Maximum (ft²/d)	Median (ft²/d)	Standard deviation
Deltaic sediment	1	1070	1070	1070		
Fluvial over lacustrine sediment	1	7142	7142	7142		
Stratified drift	5	10528	6802	15444	10070	3133
Glaciolacustrine sand and gravel (late Wisconsinan)	1	17511	17511	17511		
Glaciolacustrine sand and gravel (Illinoian)	1	2642	2642	2642		
Cape May Formation	1	1312	1312	1312		
Cohansey Formation	11	8907	3102	18499	7794	4250
Cohansey & Kirkwood Formations	7	14264	6858	24902	11256	6999
Kirkwood Formation - lower member (sand facies)	6	7351	1792	16690	5847	5022
Kirkwood Formation	6	11630	2354	38475	7007	13560
Shark River Formation - Toms River member	2	1339	442	2235	1339	1268
Vincentown Formation	1	2286	2286	2286		
Mount Laurel Formation	1	2050	2050	2050		
Mount Laurel and Wenonah Formations	3	849	633	1232	683	332
Englishtown Formation	3	1122	426	1932	1008	759
Magothy, Raritan, and Potomac Formations	1	2593	2593	2593		
Magothy Formation	9	7302	1175	22956	3050	8492
Magothy Formation - Old Bridge Sand member	1	1710	1710	1710		
Raritan Formation	3	4621	2597	8307	2960	3197
Raritan Formation - Farrington Sand member	3	12103	2803	21599	11907	9400
Potomac Formation	1	1957	1957	1957		
Potomac Formation, Unit 3 (upper subsurface)	1	7969	7969	7969		
Brunswick Group (Passaic Formation through Boonton Formation)	1	136	136	136		
Towaco Formation	2	889	583	1195	889	433
Passaic Formation	8	573	45	1375	477	453
Rickenback dolomite	1	19254	19254	19254		
Rickenback dolomite - lower member	1	127	127	127		
Allentown dolomite	1	75	75	75		
Leithsville Formation	4	2993	1041	6498	2216	2425
Leithsville Formation - Walkill member	1	274	274	274		
Leithsville Formation and Hardyston quartzite, undivided	1	1184	1184	1184		
late Proterozoic rocks, unifferentiated	1	14	14	14		
Hornblende granite	1	100	100	100		
Pyroxene granite	2	110	36	183	110	104
Hypersthene-quartz-plagioclase gneiss	2	126	95	157	126	44
Hydrogeologic unit	**Number of tests**	**Arithmetic mean (ft²/d)**	**Minimum (ft²/d)**	**Maximum (ft²/d)**	**Median (ft²/d)**	**Standard deviation**
glacial sand and gravel	9	9001	1070	17511	5363	9560
Holly Beach water-bearing zone	1	1312	1312	1312		
Cohansey aquifer	1	12505	12505	12505		
Kirkwood-Cohansey water-table aquifer system	19	12023	3102	38475	8726	8796
Rio Grande water-bearing zone	3	8101	3994	10941	3643	9369
Atlantic City "800-foot" sand aquifer	7	6637	1792	16690	4958	5744
Piney Point aquifer	2	1339	442	2235	1268	1339
Vincentown aquifer	1	2286	2286	2286		
Mount Laurel-Wenonah aquifer	4	1150	633	2050	659	958
Englishtown aquifer system	3	1122	426	1932	759	1008
Potomac-Raritan-Magothy aquifer system	1	2593	2593	2593		
upper Potomac-Raritan-Magothy aquifer	10	6743	1175	22956	8199	2655
middle Potomac-Raritan-Magothy aquifer	6	8362	2597	21599	7498	5634
lower Potomac-Raritan-Magothy aquifer	2	4963	1957	7969	4251	4963
Brunswick aquifer	11	591	45	1375	449	583

Table 4 Continued. Summary of transmissivity values for geologic and hydrogeologic units in New Jersey as of January 2002.						
Geologic Unit	**Number of tests**	**Arithmetic mean (ft^2/d)**	**Minimum (ft^2/d)**	**Maximum (ft^2/d)**	**Median (ft^2/d)**	**Standard deviation**
Jacksonburg limestone, Kittatinny Supergroup and Hardyston quartzite	9	3654	75	19254	6180	1184
igneous and metamorphic rocks	6	98	14	183	66	98
Not all aquifers New Jersey are represented on this table, because some have not been tested and analyzed.						

Aquifer Thickness

The thickness of an aquifer is defined as the vertical distance between its upper and lower physical boundaries. Determining aquifer thickness for purposes of calculating a WHPA, then, requires determining the locations of the upper and lower boundaries of the aquifer.

Because well head protection is primarily concerned with travel times in water-table aquifers, the water table constitutes the upper boundary of the aquifer. Using well logs or other site-specific information, the lower boundary of a water-table aquifer is described by the first significant confining unit underlying the aquifer. The degree to which this lower boundary can be defined will differ for unconsolidated granular aquifers and bedrock aquifers. For unconsolidated aquifers, the first significant confining layer underlying the pumping well will usually consist of a significant stratigraphic layer consisting of silt and/or clay, or in the case of glacial valley-fill aquifers, relatively impervious bedrock underlying the aquifer. When site-specific data on the location of confining units are not available, the NJGS can be contacted for the best available data in the area, or published sources such as the "Hydrogeologic Framework of the New Jersey Coastal Plain" (Zapecza, 1989) may be used. Therefore, aquifer thickness in unconsolidated aquifers will be the calculated vertical distance between the water table and the first significant confining layer underlying the well.

In bedrock aquifers, the bottom of the aquifer is not so easily described. The lower boundary of a bedrock aquifer coincides with the depth at which water-bearing fractures cease to occur, or with an underlying impervious bedrock stratum. Since information on the depth to which fractures occur is not always readily available, for purposes of calculating WHPA's, the lower boundary of bedrock aquifers will be defined as the depth of the open well bore-hole. A limit of 500 feet will be applied in assigning the thickness of bedrock aquifers. This limitation is generally consistent with data on well depths and occurrence of water-bearing fractures of wells in New Jersey. In bedrock aquifers, aquifer thickness will be the measured vertical distance between the water table and the bottom of the open borehole, with total aquifer thickness not exceeding 500 feet.

Where insufficient geologic and/or hydrogeologic data exits, aquifer thickness will be estimated using the methods listed in table 2 of this report, which are described below. Preference is given to methods that come closest to approximating the true aquifer thickness. For example, in unconsolidated aquifers the second option for assigning aquifer thickness will be the measured or published vertical distance between the water table and the bottom of the well. For bedrock aquifers, the length of the open borehole may be used to define aquifer thickness.Where information on a well is scarce, aquifer thickness will be defined as the average or median aquifer thickness from wells with known aquifer thickness in the same aquifer. See table 5 for average well depth for selected aquifers in New Jersey.

Table 5. Average depth of public supply wells in selected aquifers.

Aquifer Name	Number of Public Supply Wells	Average Depth (in feet)
Glacial Sand and gravel	252	100
Holly Beach water bearing zone	12	60
Kirkwood-Cohansey	433	120
Vincentown	8	130
Upper Potomac Raritan Magothy (PRM)	60	100
Middle PRM	54	230
Lower PRM	62	210
Brunswick	400	330
Basalt (Jurassic)	15	300
Stockton	33	340
Rocks of the Green Pond Mtn. Region, Kittatiny Mtn., and Minisink Valley	20	250
Martinsburg and Jutland Sequence	9	310
Jacksonburg Limestone, Kittatiny Supergroup and Hardyston Quartzite	72	280
Igneous and Metamorphic Rocks	212	310

Pumping Rate

The pumping rate is a measure of the quantity of water withdrawn, or expected to be withdrawn, from a well over a given time period. Pumping rate is usually expressed as gallons per minute, million gallons per day, or cubic feet per day.

The first step in selecting the pumping rates will be to determine if the well has been in production for at least two years, and if actual withdrawal data for the well are available in the Site Specific Water Use Data System maintained by the N. J. Geological Survey. If data are available, the pumping rate will be based on the preferred selection method which requires an evaluation of existing data for the well's period of operation, up to and including the previous 12 years. The 12-year time frame was selected based on the 12-year Time of Travel for Tier 3 and the availability of accurate historical pumping data. The following steps will be taken:

1) For each year of data, the total withdrawal will be determined;

2) An average annual pumping rate will be determined for each year's data by dividing the total withdrawal, in each year, by the number of minutes in a year (525,600).

3) The average annual pumping rate from the year with the highest average annual pumping rate will be selected as the maximum average annual pumping rate;

4) The maximum average annual pumping rate will be increased by a safety factor equal to 25% of the maximum average annual pumping rate;

5) If the maximum average annual pumping rate plus the safety factor results in a value that is greater than 40% of the well's pump capacity, then it will be used as the pumping rate in the delineation of the WHPA. If the maximum average annual pumping rate plus the safety factor results in a value that is less than 40% of the well's pump capacity, then 40% of pump capacity will be used as the value for pumping rate in the delineation of the WHPA.

6) If the maximum average annual pumping rate plus the safety factor results in a value that is greater than the well's pump capacity, then the pump capacity value or the maximum average annual pumping rate (without the safety factor), whichever is greater, will be used as the value

for pumping rate in the delineation of the WHPA.

If the well is new, has not been in production for at least two years, or does not have actual withdrawal data available, the pumping rates will be selected from the following method yielding the lowest pumping rate:

1) Installed pump capacity for the well.

2) Water allocation for the individual well, if available.

3) The planned maximum average annual pumping rate, over the next 12 years, if justified by the well owner to the satisfaction of the Department.

If the data are insufficient to obtain pumping rates from the above described methods, the pumping rates will be estimated based on the number of connections or the estimated population serviced by the well, with per-capita consumption at 100 gallons per-capita per day and occupancy based on census data for the municipality in which the well is located.

If the number of connections or the estimated population is not known, the average or median pumping rate for this type of well will be used.

Well Radius

Some delineation methods require a value for well radius. Well radius is one half the finished diameter of the well screen or open borehole extending over the water producing interval of the well. The well record is the preferred source for obtaining this value. In instances where the well record does not exist, well radius will be obtained from the well construction diagram of the well. If neither of these two sources exist, well radius will be selected based on the well's pump capacity in accordance with Ground Water And Wells, table 13.1, "Recommended Well Diameters for Various Pumping Rates". If the pump capacity is not available either, then the pumping rate used in the delineation will be used to select the well radius using Ground Water and Wells, table 13.1 (Driscoll, 1986).

Anisotropy

Anisotropy refers to the directionally dependent movement of ground water in an aquifer. Anisotropy arises from the orientation and spatial distribution of conductive features such as fractures, solution openings, and primary porosity (intergranular) within the aquifer. In the case of New Jersey's bedrock aquifers, numerous aquifer tests and ground-water contaminant studies demonstrate anisotropic ground-water movement (Herpers and Barksdale, 1951, Nichols, 1968, Vecchioli, 1969, Spayd, 1986, USGS, 1997, and Nicholson and Watt, 1998). These studies have described anisotropic behavior in bedrock with ground-water flowing preferentially in the direction of bedding strike.

Based on these findings, it is reasonable to expect PCWS wells to exert greater impact and more extensive capture of ground water in the direction of bedding strike. For all WHPA's located in Paleozoic and Mesozoic sedimentary rock aquifers, NJGS assigned preferential flow direction and an anisotropy ratio. In most cases, the preferential flow direction is bedding strike and in a few cases the preferential direction is the strike of a major fault from which the well appears to be obtaining water. The strike of bedding and faults were taken from published geologic maps. For the Paleozoic bedrock aquifers an anisotropy ratio of 3:1 was used and in the Mesozoic sedimentary rock aquifers, the assigned anisotropy ratio was 10:1. Anisotropy ratio is the ratio of the aquifers greatest transmissivity (parallel to the preferred flow direction) to the least transmissivity (perpendicular to the preferred flow direction)

Submission of Delineations

Any person interested in submitting a WHPA to the Department will be required to include the following information:

1. Applicant name, address and telephone number.

2. Well owner name, address, and telephone number.

3. Person(s) performing the delineation and their professional qualifications, company names, address and telephone number.

4. Department permit numbers including, where applicable, the public water system identification number (PWSID), State well permit number, water

allocation permit number, well and well-field name (if used), and water use registration number.

5. The WHPA delineations should be submitted in digital format compatible with the Department's GIS and in accordance with the Department's Digital Data Standards. These standards are found on the web at the following address: www.state.nj.us/dep/gis. Conformance with the digital standards will ensure positional accuracy and compatibility to the NJDEP GIS system. WHPA's are stored and managed on this system. In addition, the applicant may submit a mylar overlay of the orthophoto quadrangle map(s) at a scale of 1:24,000 or 1:12,000 showing the well location, well permit number clearly labeled, and the three tiers of the WHPA. The overlay must be drawn in accordance with the delineation mapping requirements section and the digital data standards above.

6. Additional mylar overlays when submited shall be referenced to the map required in item number 5 above to clearly show any physical features, water level elevations and contours, hydrologic boundaries, model grid, and all other wells or data points in the area used in determining the WHPA, as applicable. The overlays will be drawn in accordance with the delineation mapping requirements section.

7. Date of well construction, record of the well's construction, depth of the well, well screen or open-hole location, and other well and aquifer attributes as required for the delineation process, including the method used to locate the well. Sources of information must be documented. Parameters should be reported in consistent units, English or metric, and should be those commonly reported in scientific literature, and identified within the report.

8. All data, equations, derived values, and name of any models used for the delineation process must be included in the submission via electronic media compatible to the Department's GIS and digital data standards referenced above

The WHPA delineation data should be sent to the Bureau of Safe Drinking Water, P.O. Box 426, Trenton, NJ 08625.

Delineations, which are completed by the Department, will be submitted for public review within the Department's SWAP Program.
The Department will maintain and make available to the public the WHPA delineations. The Department intends to make the maps available to the public in a digital form, in conformance with the Department's GIS and showing , at a minimum, the well location, well permit number and the three tiers of the WHPA delineation. They are available on the web at: www.njgeology.org/.

Delineation Mapping Requirements

The requirement to submit a mapped WHPA pertains only to those parties volunteering to perform a delineation outside of the Safe Drinking Water permitting process. The Department will perform delineations on all public wells. This section is designed to provide easy review of submitted material while maintaining an accuracy standard of plus or minus 50 feet. The recommended method for submitting WHPA delineations is a digital format compatible with the Department's GIS and Digital Data Standards. The digital version may be accompanied by a hard copy on mylar. Mylar provides the best medium for mapping in terms of accuracy, media stability, and for the purpose of review for an overlay. Therefore, the hard copy, if submitted, of the WHPA delineation is required on a mylar medium.

The maps required for the delineation, along with the data, will speed the review process. It is anticipated that all WHPA delineations along with their pertinent attributes will be placed into a computer database and transferred to the GIS. Submitted data will be reviewed for inconsistencies. Therefore, it is important that data including the WHPA delineation be received in a usable (preferably digital) format. Digital data should meet the Department's Mapping and Digital Data Standards (NJDEP, 1998). This will facilitate Department review and input into the Department's GIS.

Well-location accuracy is essential to the delineation process. Well-location error may cause areas to be inappropriately placed under stricter controls than necessary, or conversely to not be included in the WHPA when they should. This required the Department to determine which available method or methods would provide the best accuracy. Methods in which the best accuracy could be obtained were assessed with consideration given to the cost of determining the well location and a reasonable level of technology, which would provide the best accuracy. Two methods were determined to provide an accuracy of plus or minus 50 feet or less. These are:

1) Global Positioning System = with a maximum error of approximately 40 feet to a minimum of three feet, using differential correction of field data.

2) Surveying location to the tenth of a second = 12.8 feet or other surveying technique which provides results within the accuracy limit.

The outer boundary line width of the WHPA corresponds to approximately 24 feet on the ground, using a ball point pen on paper at a scale of 1:24,000. It was decided based on best available technology, that this line would represent the boundary line of the WHPA. Due to the resolution of the well location, WHPA delineations are considered to have an accuracy of plus or minus 50 feet in any direction from the mapped location. In considering all the locational limitations, it was decided that any pollutant source located within or on the boundary of the WHPA will be assumed to be located inside of the WHPA, unless shown otherwise through more accurate well location, WHPA delineation or mapping technique.

The Department has field-located all existing CWS wells, using GPS, as part of its WHPA delineation process. NCWS wells have been field located mostly by the counties and New Jersey Water Association using GPS methods as well.

All maps and digital information must be referenced to the NAD83 geodetic datum.

All maps should have a minimum of four reference points corresponding to the quadrangle tic marks. The coordinates for each tic should be listed by the appropriate tic mark and should be in New Jersey State Plane Feet. Tic marks should be referenced to a mylar orthophoto quadrangle map at a 1:24,000 or 1:12,000 scale. Proper identification for the base map should be provided in the lower right hand corner of the WHPA delineation map.

Maps should not be so crowded to obscure the clarity of data or any features.

Information from other sources should be accurately transferred to either the WHPA mylar or the accompanying features map.
Delineations should be made with a standard drafting/technical pen producing a line width of no greater than 0.02 inches. In all cases, the well symbols, drafted lines and points should bisect the feature as seen on the base map and must be within 50 feet of its true location.

The name and affiliation of the preparer of the map, the date of preparation, the scale or scales employed, a north arrow, and the source of data used should be stated in a legend block on each map.

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Glossary

The following words and terms, when used in this report, mean the following:

Applicant- A person or persons not affiliated with the Department of Environmental Protection who submits or intends to submit a Well Head Protection Area delineation for review and approval.

Anisotropy- The condition of having different properties in different directions.

Aquifer- A saturated geologic formation, group of formations, or part of a formation which is sufficiently permeable to transmit water to a pumping well or spring in usable and economic quantities. The water table of an unconfined aquifer may vary over time; "aquifer" applies to the full-saturated zone at any time.

Calculated fixed radius (CFR) -The method of describing an aquifer volume around a well in plan view (mapped on the land surface) by a cylinder, using the pumping rate of a well and the storage of water in an aquifer, over a specific pumping time, such that the ground water within the cylinder equals the volume of water pumped by the well.

Confined aquifer- An aquifer which contains ground water under pressure between or below confining unit(s) so that the water surface rises above the top of the aquifer in a tightly-cased well which derives its water from the aquifer.

Confining unit – A body of relatively impermeable material that is above or below one or more aquifers, restricting the flow of water to or from an aquifer or aquifers.

Department – The New Jersey Department of Environmental Protection.

Ground water - The portion of water beneath the land surface that is within the saturated zone.

Hydrologic boundary - Hydrologic or geologic features which form a deterrent to ground-water flow, intercept ground-water flow, or provide a large, continuous source of ground-water flow. These boundaries may include but are not limited to drainage divides, geologic formations, geologic structures, and surface water bodies.

Community water system (CWS) - A public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

Non-community water system (NCWS) -a public water system that is not a CWS and which serves at least 15 service connections or regularly serves at least 25 individuals more than 60 days of the year.

Public water system - A system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals.

Qualified ground-water professional – Any person who has received a baccalaureate or post-graduate degree in hydrogeology, geohydrology, geology, engineering or soil science and has five years of appropriate professional experience in ground-water hydrology. This definition has been modified from the final USEPA municipal solid waste landfill rules published in the Federal Register, October 9, 1991 [40 CFR Section 258.50(f)]. This term has been so defined to focus on the appropriate education and professional experience relevant to the aspects of ground-water modeling required to perform zone of contribution analysis for water-supply wells. Applicants submitting advanced delineations requiring ground-water modeling and ground-water professionals are recommended to submit evidence of their professional credentials.

Regional hydraulic gradient – The change in head, per unit of distance, in a specified direction, within a specified region.

Saturated zone – The subsurface zone in which all the subsurface pores in the rock or soil are filled with water at a pressure greater than or equal to atmospheric.

SWAP - Source Water Assessment Program established and implemented under 1996 Amendments to federal Safe Drinking Water Act (P.L.104-182) and described in the USEPA approved New Jersey Source Water Assesment Program Plan, November 1999.

Time of travel (TOT) - The average time that particles of water will take to travel in the saturated zone from a given point to a pumping well.

Unconfined aquifer - An aquifer in which the water table forms the upper boundary and a confining unit forms the lower boundary.

Water table - The top surface of the saturated zone in an unconfined aquifer, which is under atmospheric pressure.

Well head – The well borehole and related equipment.

Well Head Protection Area (WHPA) - An aquifer area described in plan view around a well, from within which ground water is reasonably likely to flow to the well and through which ground-water pollution, if it occurs, is reasonably likely to pose a significant threat to the water quality of the well. The WHPA is delimited by the use of a time-of-travel, and hydrologic boundaries, and is further subdivided by multiple times of travel.

WHP - Well head protection.

WHPP – The Well Head Protection Program established pursuant to Section 1428 of the Federal Safe Drinking Water Act, P.L. 93-523, 42 USC 300 et. seq. and described within the New Jersey Well Head Protection Program Plan (NJDEP, 1991) and subsequent documents.

Zone of contribution – The portion of an aquifer surrounding a pumping well that encompasses all areas or features that supply ground water or ground-water recharge to the well over time.